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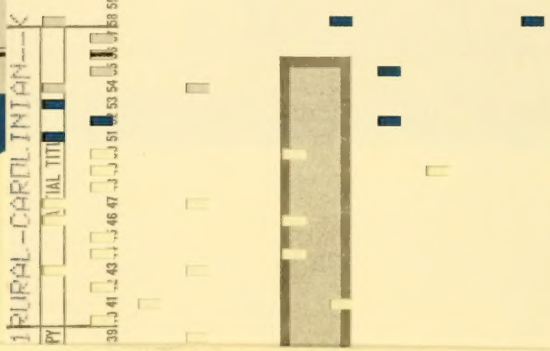

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THE RURAL CAROLINIAN:

AN

ILLUSTRATED MAGAZINE

OF

Agriculture, Horticulture and the Arts.

D. H. JACQUES, Editor.

Progress will Prevail, Truths will Shine.

VOL. IV.

CHARLESTON, S. C.
WALKER, EVANS & COGSWELL AND WM. L. ...
Nos. 3 BROAD AND 109 East Bay Streets.
1873

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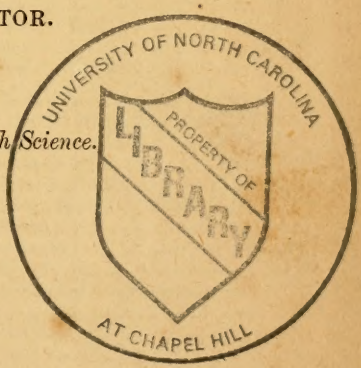

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D. H. JACQUES, EDITOR.

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Thoughts and Suggestions for the Month.

On the cotton plantation, Cotton Picking is now the first thing in order, and all other interests must, of necessity, give way for the time, whenever this work may press. With people who have "cotton on the brain," as our planters are popularly supposed to have it, any hints in regard to the gathering, preserving and preparing for market the precious fibre, may seem to be quite uncalled for, if not impertinent; but the truth is, that after the unremitting labor of a whole season in making a crop, there is often a strange and culpable want of care in saving it, and in putting it into marketable form. There is neglect to pick at the proper time; slovenly work in picking, which allows much of the lint to go to waste; a lack of care in assorting the different qualities, so that much lint of the highest grade must be finally sold at the price of the lowest, simply because some portion of the latter has been mixed with it; bad ginning, reducing good cotton to the market value of an inferior quality, and so on. This is very bad policy at any time, and in these days of progress and improvement should not be tolerated. Does not every intelligent planter know that—the original quality being the same—clean, well ginned, cotton commands in market from one and a half to two cents more per pound than "trashy cotton?" If it be worth while to make cotton at all, it must be worth while to save it and get the best possible price for it. Prompt, clean picking, careful assorting and good ginning, should be among the points to be insisted upon as adjuncts to the improved cultivation now aimed at. And with the best care in saving the lint, do not forget the *seed*, the value of which we have only *begun* to appreciate.

——— We dislike to see Corn standing in the field, after it is matured, exposed to the long autumn rains. It is true, this exposure does not ruin it, and where one must be neglected to save the other, the corn will suffer less than the cotton; but the former may be gathered on wet days when the latter cannot be picked, as there may be considerable dampness in the "shuck" without injury to the corn. Corn left in the field will shrink and deteriorate in quality, to say nothing of the effects of the "Fifteenth Amendment" on the final yield of the neglected acres!

———The Sweet Potato is the king of all the vegetable, and too much pains cannot be taken in securing and preserving the crop. With a plentiful supply of the sugary and nutritious tubers, neither man nor beast need perish, whatever else may fail. The crop, in most localities, will be dug from the middle of this month to the 10th of November. It is not well to wait for a *severe* frost, as it may injure the tubers in the ground. There are various plans for banking sweet potatoes. We give the views of a correspondent on the subject in this number. We have been accustomed to put them in heaps, cover with vines or trash and allow them to go through the sweating process before banking; then to bank in the ordinary way, except that we leave no chimney or air hole. But we think that, after all, the most important point is that the potatoes be *ripe*. If not ripe they will keep badly, with the best banking.

———Field Peas are much neglected and thousands of bushels, in the aggregate, annually wasted. They are well worth the labor of gathering and the farmer seldom has too much of this excellent legume; and if he has any to spare, he may make sure of a good price by keeping them till the next planting time.

———Farmers differ somewhat in their opinions about the best time to sow Wheat, and they differ still more in their practice; but the evidences in favor of *early* sowing grow stronger year by year. Sometimes a good crop is made from November and even December sowings, but the chances are against them; and we urge again *early sowing*—the earlier the better after the opening of the present month. Wheat requires a soil either manured or of considerable natural strength to make it a paying crop, and the land must be thoroughly prepared. Avoid situations where there is likely to be too much moisture during the spring. Clayey loams are excellent for wheat, and rather light calcareous soils, if in a good condition, produce fair crops. On poor soils we would sow rye in preference.

———Clover and the Grasses are perhaps "hobbies" of The Rural Carolinian, but having published in our last number a good deal of matter on the subject, we will spare our readers any extended remarks at this time; but there is a question we wish to have answered, as only carefully tried experiments can answer it. It is this: "What are the limitations of profitable grass and clover growing in the South?" We wish to know, for the benefit of all concerned, just where and under what conditions these crops can be raised, and where and under what conditions they cannot be raised. We care for no man's preconceived notions on these points. We want the evidence of experience. Let hundreds of farmers in all parts of the country each try an experiment with clover and some one or more of the cultivated grasses this fall, if it be on only a quarter of an acre, and the first step will have been taken toward the solution of the problem. Our own observation and experience lead us to think that *the question is really one of preparation and fertility, rather than of locality, climate or general character of soil.* Clover and the grasses do well in the South on good, strong clayey soils, well manured and thoroughly prepared. This is no longer an open question. Are there not loamy and sandy soils on which, if made equally rich and equally well prepared, they will do the same? Let experience answer.

Wheat, Cheat and Sturdy.

Although it is questionable whether wheat can be grown on a cotton plantation profitably for market, there can certainly be no doubt, but that enough wheat for home consumption might be economically grown on a large majority of the cotton farms of the South. To broadcast wheat, however, on corn land and turn it under with twisters, or to flush up the land with scooters after the wheat is sown, anticipating from either method a remunerative yield, will surely disappoint the planter.

Strange infatuation! Southern farmers and planters think all kinds of land should yield abundant harvests of all kinds of crops, with the least possible labor, except when planted in corn or cotton. These two crops will have the land well prepared and highly manured for them, and demand ceaseless labor of the laborer and employer for a twelvemonth; and, though the history of the past proves that the first pays nothing and the second often brings a load of debt, yet, year after year, they are ploughed and hoed, and coaxed and petted as if there was no possible method of earning a dime on the plantation except from the corn crib or gin house.

To subsoil land, and manure it, and harrow it, and sow it, and roll it, is too much labor for small grain, but not half enough for corn, and yet such attention will often produce a yield of almost as many bushels of wheat as corn, and the former always sells for double as much as the latter in our markets.

Oats, poor, hardy grain, if there is a sterile field on the plantation, there is where they are sown. And rye is seldom thought worthy of a spot on the plantation. Barley is a more aristocratic grain. If it is not sown on a fertile spot it will produce nothing, and hence those who sow it treat it more kindly, and for so doing are always handsomely repaid. Now this method of treating the small grain crop at the South is one cause of its being generally inferior.

Though having sown wheat for twenty years I never saw "cheat" nor "sturdy" until the year 1868. Threshing that year for the public, I received some very fine looking toll wheat which I sowed, and the next year, early in the spring, a coarse, heavy, green tuft was seen occasionally in the wheat field that excited my suspicions. It grew as rapidly and just as tall as the wheat, but headed out and ripened a little later. The grains stuck very close to the stalk and was in alternate sections on either side of it. The coarseness of this stalk and its leaves would be distinguishable to the touch in the dark. This mongrel, I was told, was "sturdy."

In 1868 I ordered ten bushels of white wheat from New York. It was beautiful. Sown in October it covered the ground before January, and, until April, promised well. In May, occasional stalks shot up at least six inches higher than the wheat, and branched into a cone shaped head, somewhat like spring oats. Hoping I had received a valuable grass, the seeds from these stalks were gathered carefully, and sown in September, 1869. It grew well all the winter and was grazed often by my sheep. Indeed every kind of animal ate it greedily, and seemed to prefer it to any other green food in the winter. As it grew to maturity, however, I was assured it was "cheat." Immediately it was ploughed under and I have never seen it since.

These two experiments were my first introduction to these noxious plants, and

although seldom having seen them on my plantation since, (occasionally I see a sprig,) I am at a loss to know what they are, *generically.* Are they *sui generis*, or are they specimens of degenerate wheat? If sturdy is degenerate wheat, what is cheat? and, *vice versa;* or why does not the land that converts wheat into either not always convert it into the same thing?

The impression is general that some kinds of land will convert any kind of wheat into cheat. For instance, I heard a farmer in this State say, he had sown wheat consecutively for four years on the same land, and the last crop was almost entirely cheat. He had then taken this mongrel and cultivated it on a different soil, and in four years restored it to its original parentage—wheat. This experiment appears unanswerable, and seems to be every way conclusive; but some how or other, I am still of the opinion, that I would as soon plant corn and expect to harvest peas as to sow cheat and anticipate a wheat crop.

A friend writing from Tuscumbia, Ala., says: "on the subject of grazing the too forward growth of wheat, is there not danger of encouraging cheat? I have no experience with it myself, but some of my neighbors, and intelligent men, say, they have repeatedly tried it with the invariable result of a ruinous growth of cheat. In one instance the green wheat was mowed down, resulting in a heavy yield of cheat."

Though annually sowing early barley, for spring soiling, and both rye and oats in September, for winter nipping for sheep, I have never sown wheat especially for this purpose. I have, however, run sheep on too forward wheat, and have never seen cheat, (I presume it is what is known here as *sturdy,*) the result of my sowing, unless I scattered cheat or sturdy seed. The plantation upon which I live has grown more or less wheat annually since the last century, and I have yet to see the first grain of cheat or sturdy hybridized upon the place.

All the small grains do well sown in August, September, or October, on cotton land, but my experience is, wheat succeeds less than either rye, oats, or barley. It does not seem to withstand the trampling by the cotton pickers as well as barley or rye, and that which seems to injure the wheat appears really to benefit oats. Possibly wheat is a more delicate and tender plant than either of the others.

Land that has been cultivated in some summer crops, if broken up thoroughly in September or October, and manured with any of the commercial fertilizers, or with cotton seed and acid phosphate compost, at the rate of ten dollars worth per acre, and then harrowed and brushed or rolled till as smooth as a floor, will ordinarily produce a remunerative wheat crop. If the crop proves a failure, the land is in fair condition for a pea crop, which if drilled in two feet beds as soon as practicable after harvest, and ploughed and hoed, an acre will produce a green crop worth twenty dollars per acre to the land if turned under when half the peas are ripe; or if sown broadcast, and harrowed and rolled will produce a hay crop worth as much as the wheat crop and perhaps more. D. WYATT AIKEN.

[The foregoing article brings up again the old and formerly much mooted question; "Does wheat ever change into cheat?"

We do not care to revive the discussion. While the scientific man can hardly resist a disposition to smile at the absurdity involved in an affirmative answer to the

question, many a good practical farmer, generally well informed too, it may be, believes in the transmutation as firmly as he believes in the multiplication table. Neither will find it easy to convince the other that he is wrong. The one points to the unchangableness and uniformity of the laws of nature, under the operation of which such a change would be simply impossible; the other, with equal confidence, brings up such instances as those quoted by Col. Aiken, or others which may have occurred in his own experience or that of his neighbors. How can either of them be answered? The farmer who, after his wheat had changed into cheat, caused it to be transformed again into wheat, has apparently not only driven in the nail but has clinched it. Who, after this, can feel any confidence in his seed, or that like will produce like, anywhere? Who knows, when he plants corn that he shall not harvest sorghum instead of maize, or that his turnips will not change to mustard or yellow dock?

We have not the slightest disposition to call in question our good farmer's veracity. We have no doubt, he honestly believes that the double change described actually took place; but it would have been a great satisfaction to have watched carefully the process, from beginning to end, or even to have a specimen of the wonderful plant, which, coming from the seed of the wheat plant, was not wheat and whose seeds, not being wheat, could yet produce the wheat plant.

Chess or cheat is technically called *Bromus secalinus.* Sturdy, we infer from the description, is upright chess (*B. racemosus.*) These plants not merely differ specifically from wheat, but belong to another *genera.* In spite of considerable external resemblance they differ in character and nature as the sheep differs from the cow. A change from the one to the other would, so far as the essential principle is concerned, be as great—as impossible we might say—as for a hog to change to a goat.

May we depend upon the laws of nature, or may we not? Will two and two always continue to make four, or, at some important juncture in our affairs, may they fail us and make only three.—EDITOR.]

Book Farming vs. Experience.

Seeming differences constantly arise from a mere misapplication of terms, and this is never more evident than in the case now under consideration.

In advocating the claims of what is called "Book Farming," we propose to be liberal, and admit that those who rail out at "Book Farming" mean to condemn *theoretic farming*, as distinguished from *practical farming*, for it must be admitted that books may be written, and some farming books are written, with no theory in them, but merely containing lists of experiments; writing or printing cannot change a spoken or acted fact; but while we are thus liberal, we propose to act aggressively in behalf of theoretic planting, not defensively; we carry the war into Africa, and claim that *theory* must pre-exist before *practice* can be of any value, that approved practice is valueless unless sustained by theory.

Agriculture is a science, and but for the thousand theories which teach of the growth of plants, etc., there would be no practice, no experience in agriculture, and no experiments whatever have been made but for a pre-existing theory.

No practical experiment in agriculture can be of any value unless sustained by reason, common sense and judgment, and as soon as one exercises these faculties he is theoretic; but if we were to demonstrate all these propositions with logical and mathematical pecision, we would be met with the reply "that is theory," "that is book farming." We, therefore, propose to illustrate our position by practical experience:

First. In 1845, a year memorable for the destruction of the corn-crop of the State by drought, a friend of ours made a splendid corn crop by this *accident:* Early in April he had ploughed and hoed over his young corn, it was in beautiful order, but his cotton crop was not ready for him; he turned right back and gave his young corn another thorough working. The result was that his corn was so pushed forward that he laid it by on 21st May, and a fine crop was made before the effect of the drought was serious. Now here is a practical experiment of great value when theory is applied, but if used only as practical experience, it would be of little value, for it would only teach that, under all circumstances, you must turn round and give your corn its second working immediately after the first. We happen to know that this lesson has benefitted others more than it did our friend who taught it. He saw the fact, others the fact and theory; he ever since pushes his corn by early and rapid working, but he did not learn all the lesson, and discover that the early working was only the part of the cause of the good crop, the not working it late did also great good, for he sometimes now, after advancing his corn crop by rapid and early work, retards and impairs it by giving it a late and deep ploughing, cutting roots when they are wanted for the maturity of the plant, while the *theorists* learned the whole lesson, and practice rapid and early work, and "let it alone severely" at the proper season.

Second. We have planted oats in July, August, September, October, November, December, January and February, and are satisfied that on our sandy lands October is the best month to plant.

We have sowed black oats, white oats, red oats, etc., and are satisfied that the red oats are very far superior to any of the others.

Now a son settles a part of the old home place. Shall he commence trying experiments with all these seeds and in all these months, in order that he may learn by experience, or shall he on the other hand take the red oats as the seed, and October as the time, merely "because Daddy did so?" Let him do neither. Let him apply theory to practice. He has seen in the end the benefit of this practice; it may or may not be the best. Let him examine the reasons; he will find that as to the time of planting, July and August will not do, in sandy lands, for the heat and drought will kill out the oats. That September is unsafe, unless you can keep down the oats by pasturing them, as they will root and fruit, and be killed by freezes in winter. November, December and January are too late, for they will not get well rooted before heavy freezes will probably kill them. February is too late, and there will be danger of rust, drought, etc., while in October, the roots will have

time to get hold of the earth before the freezes, and the early maturity will push them ahead of rust and drought. As to the seed he will find that the red oats is the best for the reason that it does not take rust, and that being a month earlier than most other oats it escapes drought, as the winter and spring supply of rain is sufficient to make it, if not a drop fall in May.

Third. A and B, two planters, years since applied manipulated phosphates to their cotton, two hundred pounds per acre, each found that it added about four hundred pounds (400 lbs.) seed cotton, per acre, to the product. Now here are practical experiments, successful and very satisfactory, and both these planters determine to push the phosphates. A, takes the practical experiment alone. He finds phosphates good; he not only persists in their use, but he applies them in excess, puts even four hundred pounds to the acre—wears out his land. His cotton "fires" and "blights" by the 15th July, and he "damns" the manufacturer of phosphates for his own fault and folly. "B," on the other hand "*theorizes*," he learns from "books," that his soil needs *four*, only four, elements to grow cotton successfully, and that manipulated phosphates only profess to have three of these, the other being absent in the phosphates and absent in the soil; he looks around and finds that he has that element in abundance in straw, leaves, muck, stable manure, green crops, etc. He continues to apply his two hundred pounds of phosphate, but he supplements it with some one of these ingredients which, in addition to other values, supplies the element missing in the phosphate, and he goes on, year after year, improving his crops and improving his land, at less cost than A goes to in diminishing his crops and ruining his land.

Now, Mr. Editor, do not these three illustrations, for the truth of which you will vouch, demonstrate that agriculture, like any other pursuit above the mere following of instinct, to be successful must combine Theory and Practice, "Book Farming and Experience?"

HOBKIRK.

How to Develop our Agricultural Resources.

The agricultural resources of the South, when rightly considered, are truly wonderful. With a climate unsurpassed for its geniality, and which admits of the planting of some of the products of the country every month in the year, and a soil of unequalled fertility, she awaits but to be made what nature designed she should be, the finest agricultural country in the world.

The consideration of this subject necessarily involves that of the much discussed "labor question," in so much, as it is mainly by labor that our great agricultural resources are to be developed. To develop them fully, is the great work before us. To accomplish this work successfully, we need an ample supply of the best improved agricultural implements now in use. To use these implements to advantage, we require intelligent, reliable labor—labor superior both in quality and quantity to that obtained from our freedmen as they work at present.

From whence is this labor to be obtained, is a question which ever since the great change in our industrial system, has been discussed by some of the ablest

writers of the country, but as yet, none, we believe, have reached a solution of it. "Liebig," a contributor to *Our Home Journal*, in a series of articles upon the subject, after pretty clearly demonstrating the impracticability of either Chinese or European skilled labor for the South, suggests as a means of overcoming the difficulty experienced, since the war, in obtaining the right kind of labor, that those of our people engaged in agricultural pursuits, off with their coats and take hold of the plough handles themselves. This, though it may not be a solution of the question, approximates, we think, a little nearer to one than anything we have yet seen. So near in fact, as to touch the key note to a solution of the vexed problem. Let each and all of us who are tillers of the soil, with a hearty good will, lay hold of the plough handles, but at the same time, instead of dispensing with the services of "Cuffee" as we presume "Liebig" intended we should, hold on to him, and make him, by example as well as by precept, the kind of laborer we need. *This plan can be made to succeed*, after which the "labor question" will have been solved, as we will then have a supply of reliable labor equal to the demand. Such is the magnitude of the work before us of developing our great agricultural resources, that vastly more labor is required than can be afforded by our white population, even though every white man from the Potomac to the Rio Grande were to become a *de facto* tiller of the soil. To make up the deficiency, the negro element of our population is, unquestionably, the most available for the purpose. "Cuffee" as he works at present, and has worked since he was made free, is with, perhaps, a few exceptional cases, far from being the right kind of a laborer, *i. e.*, one who will accomplish a good day's work, and at the same time do it exactly as it should be done. Even when working on the share system, he moves sluggishly, idles away his time, and what little he does is at best but poorly done. The bare presence of his employer or his agent has but little effect upon him for the better. If, however, his employer instead of only directing him in his work, would lead the way by laying hold of the hoe or plough, as the case may be, himself, he would be a much more reliable and efficient laborer. Meeting with a friend, just after the war, we asked him what sort of a crop he had. He replied that he had the best crop he had for ten years. Upon our expressing surprise at this, on account of the unsatisfactory manner in which the freedmen were working, he added, with a significant smile, "I work with my freedmen, and the consequence is I get a great deal more and better work out of them." We have had considerable experience in the management of freedmen. Besides superintending them in their work in a sort of a play gentleman way, we have worked side by side with them, and can add our testimony to his in favor of the plan. The effect of the example of one white laborer upon a gang of freedmen, is not very dissimilar to that of a true pulling horse or mule upon a baulky team. The chief difficulty with horses not properly trained to pull, is in getting them to start. With one well trained animal, however, to start the wagon, team and all, they not only, as a general thing, do their full share of the pulling after the wagon is started, but if properly managed will soon get in the way of helping to start it themselves. We know too that soldiers, as a general thing, fight much better when lead in a charge by a commanding officer, than when he remains in the rear and orders them to make it. The habit of the gallant Hampton, in Virginia,

was, we are told, always to lead his men into action instead of directing them to go and do thus and so. This, doubtless, accounts in great measure for his brilliant achievements. The good effect to be produced by the employer upon his freedmen by working with them, is far from being the only advantage to be derived from the adoption of the plan. The labor of himself and as many able bodied sons as he may be so fortunate to have, would cost only the ware and tear of a little muscle, and would be the best quality. This is the kind of labor that tells so wonderfully upon Northern farms. There are, doubtless, those who still regard labor upon the farm as degrading. To all who thus regard it, we would say that the idea is one of the olden time, and was conceived in error.

Agriculture, as has oft been asserted, is the noblest calling of man, and no kind of labor connected with it is either degrading or dishonorable. Some of the noblest and best men the world has ever seen, were at times the tillers of the soil. The idea that a white man can not, as a laborer, stand our hot climate, "Liebig" asserts, has been exploded. We can, from experience, bear him out in the assertion. In *ante bellum* times, we were, perhaps, regarded by some as a sort of fancy gentleman. We rode fancy horses, wore kid gloves, fancy hats, boots and clothes, kept an umbrella stretched over our devoted cranium when exposed to the direct rays of the sun, and made love to the pretty girls in quite a sentimental way. Now we think we are about as near "all horse and half alligator," as was ever old Davy Crockett, and can, perhaps, come about as near "whipping our weight in wild cats, riding on a streak of lightning or jumping the Mississippi," as he ever did, and can do as much hard work in the hot sun as any body else, regardless of "any previous condition of servitude, race or color."

On another occasion we may say something in regard to what we consider the most advantageous form of contract to make with freedmen.

St. Matthew's, August, 1872. HILL-SIDE.

The Kapnophyte Patent Defended.

In one of the late issues of THE RURAL CAROLINIAN a correspondent condemns the granting of two such patents respectively as Kapnophyte (patent obtained), and one for coloring seeds, (patent applied for). As to the latter process, I agree with him, that no patent should be granted. Why? Because the process was known and practised, before the Charleston inventor's great-grandfather was born. It was practised in the time of and perhaps before, the great agriculturist Jethro Tull; but not so with Kapnophyte.

According to the best of my knowledge, and that derived from tolerably extensive reading, the process of manufacturing Kapnophyte originated, so far as I know, with Messrs. Whitley; and if not entirely new, yet it is so in its main features.

I am well aware that the practice of burning and charring soils such as clay, turf, peat, etc, is as old as the hills. The burning of earths though was never done in a way to prevent the escape of their gaseous elements, but to char the soil or clay, etc., in order to change some of its component parts, and also expel all moisture,

thereby rendering it, not only more valuable as to its manurial qualities, but also by forcing out the moisture to make it a powerful absorbent and deodorizer. In the burning of turf, sod or pasture parings, no one thought of preventing the escape of its gases in the smoke, etc., but it was burned in heaps, adding more as the heat became more intense. The soil, tied together as it was in the turf by millions of roots, was itself dried by the fire that consumed these roots, and was mixed with the ashes of the burned roots, and other vegetable matter, thus forming at once, a powerful absorbent, as well as an intrinsically valuable fertilizer.

The Kapnophyte does not claim for its ultimate object, the burning or charring of the soil. It may be classed as one of its component parts, but by no means the chief one, and I may say further that the burned soil is not even one among its best elements. It might be named as the principal absorbent and deodorizer, there being two or three; but the great, value of a pit of Kapnophyte depends, first, and I presume chiefly, upon the ashes from the combustion of vegetable matter, and the thoroughness with which this burning is done, and the length of time consumed. Slow combustion and decomposition is essentially one and the same thing. Second, in the quantity of pyrogenic oils, and pyroligneous acids contained in the gases, and absorbed, both by the partially charred soil, and the ash of vegetable fibre consumed, the latter being also anti-acid, must act beneficially upon what pyroligneous or other acid may be generated. At any rate, it is nowise hurtful.

The discovery of Mr. Whitley, therefore, consists in a process, (or a manufacturing laboratory so to speak) which, being set in motion, accomplished not only a burning or charring of the soil, but is arranged in such a way that, while this is being done, a large quantity of vegetable matter is being subjected to a slow combustion, and all of its fertilizing gases retained by absorption.

It is well known that the ash of a plant contains only what the plant extracted as nourishment from its mother earth. All else, it obtained from the atmosphere and rain, and upon being burned in the open air, it escapes back into the air, there to await its next appropriation and transformation.

Whether the plant, roots and all, when burned will yield in ashes, by weight, more than that received from the air, I am not fully prepared to say; but I think the plant generally receives more of its bulk from the air, than from the earth. If I am right here, then it is essentially important, if possible to do so, to adopt any plan by which both parts may be kept in the compost heap, especially as those elements coming from the air are the more soluble.

Again, it is well known that pine and broom-straw, the chief elements of the Kapnophyte pit, (though other and heavier materials may compose it) loose nearly all of their ash when burned in open air, going off in small feathery particles, along with the smoke. Then, again, that such material as pine and broom-straw are used up in its manufacture is one of its chief recommendations, as 7.10 of the land owners can obtain any quantity of one or both for making it. We all, too, use pine straw, in forming our best fertilizers, *i. e.* stable and barnyard manure.

And now, to conclude, Mr. Editor, I am about to write what three-fourths or more of your readers I suppose will have no confidence in, viz: I agreed to act as an agent for Mr. Whitley, believing as I did, that the Kapnophyte would vastly

benefit the larger part of the farming community. Having a greater interest in advancing the cause of agriculture in this State, and the South at large, than I had in what percentage its sale would bring me. Well, then, while I uttered in the above sentence the real feeling that prompted my heart at first, yet now I feel that if the people think it all "humbuggery," "coming it too strong," etc., I would not put down my book, and walk to my front gate, or toss up five cents, to obtain one single purchaser of a right, provided he had cried "humbug," without having investigated the matter.

Our people seem to care but little if they are caught with some "Yankee trick," as many in our county were recently, by a strolling Yankee who came along, with a cotton transplanter, and they paid him $300, in cash, for implements he was to send them when he got "to hum." The $300 went right along, but the transplanters came not.

I am of the opinion that even a simple thing, if meritorious, ought to be patented. Why? Because if one discovers a good thing, indeed the best of its kind, he can not disseminate or publish a knowledge of it, unless paid for it; as his time and labor are money to him, even if it cost him no cash. He may be ever so willing and anxious, but if he is to get nothing to pay him back for letting others know it, then it will never be known beyond his own neighbors. One more idea and I have done. Even admitting that some have made Kapnophyte, precisely by the formula, yet thousands know nothing of it; and you, Mr. Editor, wrote me "it was a good thing, an excellent thing;" then why cry "down with a patent on it." I can find ninety-nine men out of every hundred here who are entirely ignorant of it, and by paying $5, the cost of two pair brogans, they may make $5,000 in a few years. I have mentioned it to many and they knew nothing of the process. But some can set an egg on its end, only first let Columbus flatten it on the table. W.

[Our views in regard to the Kapnophyte and the propriety of a patent on it have been already placed before our readers, and we cheerfully allow our correspondent a hearing without further comment.—EDITOR.]

A Native Southern Forage Plant.

Much has been said and written on the subject of pasturage in our Southern latitude, and I am confident that no subject is more deserving of our attention than this. But while much has been said, but little has been accomplished.

Our failures arise from two causes. First we have overlooked the natural growth of our own soil and climate, which a wise and merciful God gave us for this purpose, and sent hither and thither for various grasses, clover, etc., which find little or no congeniality in this latitude; and, secondly, we have not been sufficiently aware of the value of *good* pastures to give proper attention to the varieties that have been introduced.

It is a *rule*, with but few exceptions, that God has placed the elements for successful farming in every section of country adapted to agricultural pursuits; and it is

unnecessary, only in a "world of chance," such as is described in one of our old school books, to go ten or twelve thousand miles after manure to put on the land to make produce, and it is equally as unwise to send a great distance for the elements of a good pasture.

We have in Florida the best clover in the world, and I am quite sure that it will flourish in all sections too far South for the red, alsike and other varieties. It is known here by the name of "beggar lice," but unless a better name is suggested, I shall insist upon its being called "Indian clover." It begins to come up with the earliest vegetation, and continues to come till frost prevents it. A field of corn, laid by the first August, will have a crop of it as thick as it can grow, ranging from 8 to 20 feet in height by frost. These are some of its characteristics: It grows very rapidly; it will die if cut in the rainiest weather; it bears thousands of seeds to the stalk; horses, cattle, sheep, and hogs prefer it to any other vegetation grown here; it is as good as clover when dry; it never injures any kind of stock; stock fatten more rapidly on it than on peas, crab or crowfoot grass; as a fertilizer it has no superior among the green crops; it will grow well on any land, but the richer the better; it is less dependent upon seasons than anything that grows here; a bushel of seed would sow five acres or more; three or four crops might be cut annually; it should be cut at from 4 to 6 feet high; it is easily cut, and stock will eat stalk and all; gathering cotton, where it is thick, is not pleasant, but it can easily be kept out of the cotton field; it will not do well, more than one year, in a field that is not ploughed. J. M. STOKES.

Model Farm, near Madison, Fla., August, 1872.

[The plant referred to by our correspondent, we suppose to be a *Cynoglossum* (hounds-tongue), of which there are at least three species indigenous in the South, generally classed as weeds and pests. The species described by Mr. Stokes, we presume is *C. Virginicum*, Lin., which has been mentioned to us by several persons from Florida as a valuable forage plant.—EDITOR.]

Report of the Commissioner of Agriculture.

The Report of the Commissioner of Agriculture, for 1871, was promptly distributed during the month of August last, some four months in advance of the usual time of publication, which speaks well for the present management of the Department.

The volume before us will compare favorably, we think, with previous issues, and it contains an unusual amount of information of special interest to the South. Under the title of "Southern Fruit-growing for Market," is furnished information relating to fruit-culture in the South. The article discusses the subject as it relates to the States of Delaware, Maryland, North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Louisiana, Texas, Arkansas and Tennessee, and shows the progress making in fruit-culture in these States.

"A Few Facts from Florida," gives many interesting and valuable facts con-

cerning the topography, climate, soil, rain-fall, population, area, improvements to facilitate transportation, value of land, etc., in this semi-tropical State.

The introduction of the jute-plant and its successful cultivation promise a new source of trade and wealth to the South. An article is devoted to the result of experiments with seeds furnished by the Department, the proper mode of cultivation, preparing the fibre for market, etc. The importations of jute and similar fibres for the fiscal year ending June 30, 1871, were as follows:

Raw, 26,450 tons, valued at	$2,131,056
Manufactures of 228,873 square yards, valued at	28,556
Gunny-cloth and other bagging, 30,124,466 pounds, valued at	1,468,902
Other manufactures, valued at	1,734,474
Total	$5,362,988

In an article on "Current Facts in Agriculture" are given the results of many experiments in farming and fruit-growing in this and other countries. It is followed by an article detailing recent farm experiments in this country.

The subject of irrigation is one of much importance. Instructions, based upon long practical and professional experience, are given for a simple and complete system of irrigation. This is followed by a description of the systems of irrigation of different countries, in which the European systems are explained at length.

An Act of Congress, approved March 3, 1871, provides for celebrating the hundredth anniversary of American Independence by holding an international exhibition of arts, manufactures, and products of the soil and mine, in the City of Philadelphia, in the year 1876. An article on this subject shows the close relations of our agricultural interests to this exhibition, and points out the way by which those engaged in agricultural pursuits may assist in making it a great success.

These, of course, are but a few among the many important subjects discussed in the volume. We may refer to and quote from these and others at some future time.

Congress has ordered printed 255,000 copies of this volume. Out of this large number the Department receives but 25,000 copies—scarcely a sufficient number to supply its regular correspondents, agricultural associations, the press, and its foreign exchanges. Senators and Members of Congress receive between six and seven hundred copies each for distribution among their constituents.

Farm and Plantation Notes.

Fall Ploughing for Corn and Cotton.

The many and great advantages of fall ploughing seem to be almost entirely ignored by the Southern farmer. Fields which have been in small grain are pastured to exhaustion, and what is left by the cattle is permitted to dry up and blow away or lodge in the fence corners. Corn fields are similarly treated, in fact are trampled all winter by stock, with very little benefit to the animals and much damage to the land. This is one of the deep ruts in which we are running and out of which we must get before we can find easy travelling. On the stubble fields,

cow peas, or some other good green manure crop, may be sown and ploughed in just after the grain is taken off, to grow and be turned under before frost; or, if nothing better can be done, the stubble and weeds may at least be treated in this way, while there shall yet be manurial value in them, as may the stalks and grass of the corn field. In either case the vegetable matter will have time to decompose and become incorporated with the soil before planting time; and the earth turned up will get the full advantage of the mellowing influences of the winter frosts. Land thus prepared in the fall is very quickly and easily put into condition for planting in the spring.

What is a Suitable Clover Soil?

Rev. C. W. Howard, in answer to this question in *The Southern Farm and Home*, says that it must contain a large percentage of clay. Our extremely sandy lands on or near the coast, he thinks, will not grow clover successfully. On them the pea must be the substitute for clover, but where the surface is sandy and the sub-soil clay, the clay may be brought to the surface and manured; clover will then thrive upon it. Generally a good wheat soil, and every farmer knows what that is, is a good clover soil. The richer the soil, the more rankly will the clover grow. It is time thrown away to sow clover seed on land that will not bring ten or fifteen bushels of wheat to the acre, or its equivalent in other grains. Clover thrives on bottom lands thoroughly drained. Hence it is the opinion of Mr. Howard, that the rice lands on our coast would yield magnificent crops of clover, and be more profitable, all things considered, than rice. We fully coincide with him in this belief, and we are glad to know that the experiment of raising clover on rice lands is to be thoroughly tried by one of our best planters near Georgetown.

An Experiment in Deep Ploughing.

In the fall of 1869, Mr. A. Dexter, as reported in *The Kansas Farmer*, ploughed thirty-seven acres from twelve to fourteen inches deep, using six horses for the work. The ground was sown in September, and the young grain made a fine growth that fall. The next season was very dry, so much so that vegetation generally suffered severely, but this piece of wheat did not show any marked effects. It was remarkably free from weeds, and very even in growth. When it came to be threshed, the yield was 20 bushels per acre, while adjoining wheat lands, with shallow ploughing, yielded less than half as much. The next experiment was with the same piece of land and forty acres more adjoining it; the land was ploughed with eight horses, four abreast, and the average depth attained was somewhat greater than before. The growth was very fine and uniform, and the yield of the whole piece (77 acres) a little over *thirty bushels* per acre. These experiments do not prove that all lands may be ploughed from twelve to fourteen inches in depth, with benefit, but they do show the value of deep ploughing on soils suited to such treatment.

Corn Cobs as a Source of Potash.

The Boston Journal of Chemistry has been figuring up the value of the corn cobs of the United States, for the year 1871, and finds that they would have yielded of potash alone, 115,500,000 pounds. The corn cob is very rich in potash. The average amount found in the ash of cobs being about 7½ pounds of the carbonate

in the hundred, which is twice as much as is found in the ash of the willow, the richest of all woods in this salt. If it were practicable to procure and remove the potash from all the cobs grown in the United States, it would indeed constitute a mountain of the valuable alkali.

Gleanings from Various Fields.

Black against White Labor.—John H. Dent, of Georgia, in *The Plantation*, gives his experience with black and white labor, which he has this year put to the test, side by side on his farm, having hired an equal number of each class of laborers under precisely the same contracts. The results are thus stated:

The negroes have made equally as good crops as the whites, were more attentive to field and lot duties, more compliable and obliging in everything required of them, and *decidedly more adhering* to their contracts; in a word, *covering all points*, they are *much to be preferred to the white laborer*. The white laborers were contentious, seeking every advantage, fault-finding, and considered their contracts as something in which he might turn into some speculation to his own advantage pecuniarily, or in saving him from labor. Their wants are insatiable, and their worst features are, so soon as the crops have been made, commences with them, "they must begin to know about another year's contract." But before hinting it to their employers, they commence tampering with the negroes, telling them they have not been paid high enough for their services, and putting them up to exact more. Their plans are to make a tool of the negro in carrying out their point: first, by making them dissatisfied and contentious, and after thus succeeding, and causing them to give up their places, where they have really done well, and finding out that the employer is firm in not yielding to their exactions, then the whites are willing to renew their former contracts.

Whether the white laborers were Southern, Northern or foreign is not stated. The writer adds the very important and suggestive remark that "there is a great deal in tact, in the management of men, some may get along better with the white laborer than with the negro, and *vice versa*."

Social Life Among Farmers.—*The Germantown Telegraph*, the agricultural department of which we always look over with great interest, laments the restricted social intercourse of the farmers, but discovers the beginning of a change for the better, resulting from county fairs and little neighborhood clubs. The venerable and respected editor adds, in conclusion, a paragraph which we commend to the especial attention of Southern clubs and granges:

On these occasions the wives and daughters of families should always accompany their husbands, fathers or brothers—not to participate of course in the proceedings that may take place, but to increase the agreeability of the meetings, and to share in the pleasure of these delightful interchanges of good neighborhood. Indeed, if the truth must be spoken—and we are ready to do it upon all occasions, especially upon such a one as this—there is very little social enjoyment in the world which is not refined and made doubly enjoyable by the presence of woman.

It is one of the grand merits and beauties of the Order of Patrons of Husbandry that it permits and encourages the presence of women to chasten, enliven, elevate and refine the social intercourse of the Grange.

A New Manure from Night Soil.—In the February Report of the Department of Agriculture we find a description of an improvement in the manufacture of artificial guano from night soil, which has been discovered in England:

It was first ascertained that Portland cement turned night soil into a dry mass, which when crushed gives 18 per cent. phosphate of lime; this rather insoluble phosphate was made soluble by the application of more night soil and urine with some sulphuric acid, and its carbonate of lime was converted into plaster. This solidification deodorizes and removes all offensive smell, hydrates all the moisture which being chiefly urine possesses fertilizing power to the last drop, together with all the ammonia, alkaline salts, and other fertilizing matter of the night soil.

This process doubtless preserves and utilizes fertilizing elements which are partially destroyed or lost in the operations of the earth-closet system.

More Wonderful Cotton.—We have heard nothing lately of the big cotton trees of Alabama, (two bales or so to the plant,) which were to revolutionize our planting industry, but Dr. T. L. Anderson, of Wilkes County, Georgia, has, we are told, developed by cultivation and a careful selection of seed a new variety of cotton, which is at least curious and which may be very valuable. It is described in *The Washington,* (Ga.,) *Gazette,* as follows:

In growth and appearance the weed has the resemblance of the prolific varieties, growing up in a somewhat conical form, though we think the growth is more vigorous than these varieties. The squares and blooms grow in clusters, and very thick. A very large proportion of the bolls are what we would call double for want of a better word; that is, two bolls are produced from the same square. This tendency to doubling is exhibited throughout the plant, and stalk and limbs of many specimens seem to take on the same characteristic, there being a groove on each side, presenting somewhat the appearance of a double-barreled gun. This crowding of the bolls does not seem to diminish their size, but they are generally very large and healthy in appearance. Upon one stock in his field, Dr. A. exhibits fifteen young bolls so closely clustered as to be covered with a single open hand.

Saltpetre as a Fertilizer.—*The New England Farmer* quotes many instances tending to show the beneficial effects of saltpetre on various crops and soils, a few of which we copy:

A gentleman used it in the kitchen and flower garden, where it increased the beauty and prolonged the bloom of the flowers. At the rate of 200 pounds per acre, on a crop of horse-radish, he experienced the most beneficial results. It prevented mildew on early peas and wall fruit trees. On gravelly grass lands the results were exceedingly satisfactory. On calcareous or limy soils the effect of saltpetre was excellent; the green color of the crops was rendered much more deep, and the increased produce far more than compensated for the expense of the saltpetre. Its application to red clover was attended with the same success. In England it is supposed that the most effective method of enriching land is by folding sheep upon it—and yet a gentleman in Hertfordshire produced with 100 pounds of saltpetre to the acre effects more than equal to those produced by folding sheep. Another gentleman states that on the sandy lands of Surrey, with 100 pounds of nitre on clover, he produced results fully equal to those of twenty-five cubic yards of horse dung.

New Zealand Flax for the South.—Mr. A. Carr, of Carbondale, Pa., who for some years resided in New Zealand, and paid special attention to the so-called flax, (*Phormium tenax,*) cultivated on that Island, thinks it would be profitably produced in this country. He says:

The dressed fibre commands the present year in the English market £25 per ton, and in New York 9 cents per pound in gold. It can be used as a substitute in all products manufactured from the common variety as linen, cordage, paper, &c., and is extensively used for stuffing chairs, mattresses, &c., being as suitable and durable for that purpose as horse-hair.

In 1871, we distributed seeds of this plant to many persons in various parts of the South, but, so far as we can learn, none of them germinated.

ALFALFA (LUCERNE) IN CALIFORNIA.—A California paper makes the following statement, which would be somewhat astounding if it had come from any other country:

We saw one piece of twelve acres of meadow which had just been mowed the second time this year. The first mowing in April yielded forty-two tuns, and the last, fifty; thus making ninety-two tuns of good alfalfa hay from twelve acres of land! It will, probably, be mown twice more, and may yield an equal amount. If irrigated, it would undoubtedly yield more, thus making over fifteen tuns of hay to the acre in one season.

HORTICULTURE AND RURAL ADORNMENT.

Horticultural Hints for October.

Gardening in the South is a never ending round of pleasant and healthful work. Each month has its appropriate operations. There are always seeds, plants or trees to be planted, and crops which require cultivation, and in the lower belt of the Cotton States at least, with judicious management, there need never be a single week in the whole year in which something palatable and wholesome may not be gathered for the table. If the experience of the reader do not confirm the truth of this last remark, he may be sure the fault lies in his own negligence or lack of skill and not in the soil or the climate.

———Among the most important operations of the present month is the preparation of such parts of the garden as are not occupied by growing crops for winter and spring planting. There should, first, be a general cleaning up, the weeds and grass being gathered into heaps and carried to some convenient corner, set apart for the purpose, to be reduced to manure through the process of decomposition, or used as mulch, when required. Sprinkling with lime, or, better still, with a mixture of salt and lime, will hasten the decomposition and add to the value of the compost. Having cleared the ground, spread on and spade in as deeply as possible a *very heavy* dressing of manure. If you have been accustomed to manure heavily, just double the quantity this fall and you will not have cause to regret it. The coarser and fresher the manure for this dressing the better, especially if the soil be clayey. It will have time to ferment and decay in the soil, which will become a chemical laboratory for the production of all the elements of fertility. A top dressing of fine well rotted compost, to be applied at the time of planting and lightly dug in, will put the soil in a condition to give your plants a quick, vigorous growth.

———If *Celery* have made sufficient growth, the work of earthing up may be commenced, though we generally leave it till later, and then begin and complete the process at the same time. The plants must be perfectly dry, and must be handled with care to prevent the soil from falling into the heart, and thus causing it to rot. *Endive* does not require earthing in this climate, but is best blanched by tying up. Choose a time for doing it when the plants are free from moisture. Protect against hard freezes, if necessary, by throwing some hay or straw over it.

———Every garden should have an *Asparagus* and an *Artichoke* bed. *Rhubarb* is quite as desirable, but, judging from our own experience here in the Low Country, much more difficult to manage in a hot climate, with long dry summers. Procuring good strong roots at the North, we plant in the fall or winter in deep rich soil, and get a moderate crop of leaf-stems the first season. This is contrary to rule, but we find that, whether we cut them or not, most of the plants will die out during the summer. In the middle country and further north, it does better. Those who have beds of either of the plants here mentioned, should give them a heavy dressing of manure towards the last of the month or in November.

———Those who did their whole duty in the vegetable garden during the past month will have cabbage, cauliflower, kohl-rabi, turnip, beet, carrot, parsnip, radish, onion, (from seed,) and other plants now growing thriftily and requiring *cultivation* and *thinning*. Snap beans and peas, planted early in September, may still require some attention to keep them free from weeds.

———In the latitude of Charleston and southward, White Flat Dutch or American Redtop *Turnip* may still be planted. Thinnings from the Ruta Baga rows may be transplanted as readily as cabbages, if it be desired to increase the plantation.

———Sowings of *Spinach* for winter use (Large Flanders or Round Leaved Savoy) may still be made. Sow, also, *Radish*, (French Breakfast is best,) and sow and transplant *Lettuce*. *Cabbage* may be transplanted during the month, if plants can be had, and seed sown for the spring crop. *Leek* and *Onion* sets may be put out, and onion plants (the thinnings of the seed rows) transplanted.

——— We have frequently spoken of the *Running Mango*, or Vegetable Pear, (*Sechium edule,*) as a desirable vegetable for cultivation wherever the climate will permit it to mature, and we hope many have now fruit on their vines. It should be carefully preserved for seed and for winter use by packing in dry sand and securing against frost. The green *Tomatoes* still on the vines when frost is apprehended, should be gathered for pickles, or for ripening in the house. For the latter purpose, it is better to hang them up on branches of the vine cut off with them.

———*Strawberry* plants may be set any time from September to March, but October and November are, as a general rule, the best months for this work. Raspberry plants may be set out toward the last of this month, or in November. For notes on the best varieties, the reader may consult the present and many back numbers. Set Strawberry plants in rows two feet apart, the plants eighteen inches apart in the row. The Raspberry does best on the north or east side of a fence, where it will get partial shade. Plant from three to four feet apart.

———In *Orchard* and *Fruit Garden* clearing, manuring and breaking up processes similar to those recommended for the vegetable garden should be put into operation, modified, however, by the fact that here we have a perfect net work of permanent roots to deal with and the working must be shallow. If the grass and weeds can be turned under, however, it will be beneficial to do it. Mr. Berckmans, in *The Farmer and Gardener*, recommends Brinley's Weed Hook, attached to the beam of the plough with which he says the weeds can be turned under in fine order. A dressing of lime applied before ploughing will help to decompose the vegetable matter and benefit the trees. If additions are to be made to the fruit area, the sooner the land is prepared by manuring, close, deep ploughing and subsoiling the better. Ground bones, dissolved bones, wood ashes and lime are excellent applications. Trees should be ordered from some good Southern nursery, and all tree peddlers are to be avoided. Gather winter apples before frost and put them in a cool, well ventilated place.

———As September was mainly hot and dry in most parts of the South, little successful work was accomplished in the *Flower Garden*, and any directions given for that month will mainly apply to this. We have repeatedly warned our readers to disregard many of the directions found in seed catalogues, and books on gardening, published at the North. They are often correct and valuable when applied to the latitude of New York or Pennsylvania, but worse than useless here, and leading to disappointment and to unjust accusations against honest seedsmen, whose best seeds fail to germinate, simply because the proper conditions of temperature and moisture are lacking; or the plants die, after coming up, from the same cause. A large class of annuals, which are generally planted in the spring, at the North, with the best results—many of which, in fact, can not be planted at any other time with success—here fail entirely if planted at that season. The seeds of nearly all those annual plants termed *hardy* in the catalogues, may, and many of them must, be planted, in the fall, in this climate; and the same remark applies to hardy biennials and perennials. Sowings may be made in September when not too hot and dry, but generally October, especially in this latitude and southward, is a more favorable month for the operation. Among the seeds of flowering plants to be sown now, the following are particularly desirable: Pinks, of all kinds, Carnations, Picotees and Sweet Williams; Sweet Alyssum; Candytuft; Stocks; Larkspur; Pansies and Violets; Clarkia; Phlox; Petunia; Verbena; Collinsia; Daisy; Viscaria; Perennial Peas; Lychnis; Nemophila; Mignonette; Forget-me-not; Rocket; and Perennial Poppy.

———If one has not a plenty of better *Winter Blooming Plants* for house-culture, many young seedlings of Zinnia, Salvia, Calliopsis, Verbena, Balsam, etc., may be taken up from the garden and potted and will repay the little trouble necessary to protect them. Petunias, Ageratums and other plants are easily raised from cuttings, for the same purpose. Lantanas Geraniums and Helioliopes should also be propagated. The old plants which have bloomed during the summer may be taken up, cut back, potted and preserved during the winter in a cold frame. In the latitude of Charleston, the Lantana may be cut back and left in the open ground if covered with a little straw or other mulch.

———*Planting Bulbs* for winter and early spring blooming is in order. Those who are not already supplied should procure at once from Berckmans, Dreer, Henderson, Vick, Briggs & Bro., or some other trustworthy florist, such as they need and can afford to buy. Hyacinth, Tulip, Narcissus, Crocus, Jonquil, Iris, Crown Imperial, Snow Drop and Lilies of various kinds are all desirable. Gladiolus bulbs, if not already taken up, should be lifted and put away in paper bags to be planted in the spring; also Dahlia tubers. Be on the look out for indications of frost and house all tender plants, some of which, in fact, suffer greatly from a temperature considerably above the freezing point.

"Will it Pay" to Cultivate Small Fruits?

While the producer did not realize as much profit from the sale of his strawberries and raspberries this season as he did last, still we believe, on an average, the prices paid as well on the capital invested in their culture, as it could have been possible to have made from any other crop. When strawberries get below 10 cents per quart they will not pay the market farmer to raise them.

But when small fruits are cultivated for home use, they *always* pay a very handsome income, aside from the mere consideration of dollars and cents. They pay in health, pleasure and enjoyment. How much better it is to go into one's garden and pluck the large, fine, sprightly flavored strawberry, your own raising, than to depend upon your neighbors, or upon a precarious supply from some old field. It is exceedingly pleasant to sit down to a dish of sweet, nice raspberries from plants which, perchance, a dear wife had something to do with their culture. How much more palatable, wholesome, and digestible is a bunch of ripe, luscious grapes cut from a vine which we planted and trained than the wild sour bulces. And how comparatively few planters there are in the South who enjoy these luxuries. Less bacon and more fruit would save many a doctor's bill.

It is not necessary for a farmer to get all the varieties of small fruits he sees in the nurseryman's catalogue. A few choice sorts are sufficient. The following list embraces such as can be recommended. They stand our climate, and ripen pretty much in the order named:

Fig. 1.—Wilson's Albany.

Strawberries.—Triumph of America, Wilson's Albany, Boyden's No. 30, Charles Downing, Triomph de Gand, and Kentucky. The White Pine may be added for amateur culture, as it is the most delicious strawberry that grows, but is not productive.

Raspberries.—Doolittle's Black-Cap, Davison's Thornless, Mammoth Cluster, and Philadelphia. The last is a red raspberry of the sucker variety, and it does the best on my grounds of any of its family. But the most reliable are the black caps. Doolittle's for early and Mammoth cluster for late. This last is very hardy, very productive, and fruit of fine flavor and large size.

Grapes—Hartford Prolific, Concord, Ives, Delaware, and, if a wine grape is wanted, the Clinton. Where more variety is wanted there may be planted of Roger's Hybrid's, the Goethe (No. 1,) Wilder (No. 4,) and Lindley (No. 9,) all good varieties.

It is useless to recommend any variety of Currants. They can not stand our hot sun.

Of Blackberries, the New Rochelle can be particularly recommended. The Early Wilson and Kittatinny are both fine varieties and very productive.

Fig. 2.—Philadelphia Raspberry.

To grow small fruits successfully the ground must be thoroughly prepared by deep ploughing. If stable manure is to be used, it should be turned under at first ploughing. The top surface should be liberally dressed with well rotted manure, ashes and muck, cotton seed and muck (composted) or superphosphate. It is always best to keep Strawberries in hills or stools, and not allow them to run into matted rows. The matted row system *will not* do for any of the large varieties.

Many persons set beds of Strawberries, give them a few workings and then, after all, neglect them and allow the weeds and grass to choke them to death. If large yields of fruit are desired, they must be thoroughly cultivated between the rows, while the lateral roots of the plant should not be disturbed. Runners must be kept cut off. In this climate Strawberries can be planted any time between last of October and first of March.

Raspberries may be planted in rows six feet apart by three feet in the row. Raspberries should not be transplanted until the roots are well matured. My most successful planting has been during the months of January and February. In early fall the roots are succulent and are more apt to die.

It always pays to mulch small fruit plants. When they need working, remove the mulch to an adjoining row and then replace it. J. P. H. BROWN.

Augusta, Ga.

The California Horticulturist gives the following list of plants as best adapted to house culture: Zonale Geraniums, both single and double; Cactus; Camellia Japonica; Ferns; Heliotrope; Ivy; Hoya (wax plant); Saxifraga; Azalea; Auricula; Begonia; Cuphea; Diosma; Lobelia; Lantana; Myrtle; Oleander; Chinese Primrose, (*Primula Sinensis*); Bouvardia; Caladiums; Hibiscus; Salvia; Poinsettia; Orange; Gesneria; Gloxinia; Euphorbia; Daphne; Cyclamen; Cinerarias; Calceolaria; Eyrsiphyllum (climbing or trailing;) and Coleus.

Clarke's Pearmain or Columbian Russet.

This apple has, we believe, been grown in the South, under various names, for a hundred years or more, and yet it is less generally known than many newer and not more valuable varieties. *Yellow Pearmain* and *Golden Pearmain*, are among its synonyms. Size of the fruit, medium; form, roundish conical; color, greenish yellow, much striped and blotched with dull red; flesh, juicy, with some acidity, but a pleasant flavor; keeps till February. The tree is moderately vigorous, and a good and uniform bearer.

The Herstine Raspberry.

This is a new variety, a cross between the Allen and the Philadelphia, has received the highest praise from such good judges as Thomas Meehan, William Parry, Charles Downing, and P. T. Quinn. It has not yet been sufficiently tried in different soils and climates to determine its fitness for general cultivation. It is said to succeed well on sandy soil, which is a good point with us here in the South. It may, at least, be set down as a promising new variety, worthy of a trial, and that we hope to give it, and trust that others will do the same, and report on its behavior in our *trying* climate. The Herstine is thus described:

Plant a good grower; most abundant and early bearer; suckers moderately; canes long, of a pea-green color, covered with white bloom; spines green, but not abundant; foliage healthy, of medium size, and often lobed, of a pearl-gray color on the under side; fruit large, oblong, with small grains and crimson color; flavor sub-acid, and very good.

Mr. William Parry, the well known nurseryman and fruit-grower of Cinnaminson, N. J., thus writes of it in a letter to Mr. Herstine, the originator of the variety:

They appear to be well adapted to our sandy soil; the canes make a strong, vigorous growth, are now over six feet high, and still growing. We consider them as hardy and productive as the Philadelphia; fruit much larger, firmer, more delicious, and of a beautiful bright red color. They are the *best Raspberry* for market or home use that we have ever grown here, although we have tested over one hundred varieties. [*See Frontispiece.*]

Seasonable Orchard and Garden Notes.

Miniature Greenhouses for Rooting Cuttings.

Under favorable atmospheric conditions cuttings of geranium, coleus, petunia and many other plants can readily be rooted in the open air and in common garden soil, the propagating pots or boxes being set in a shady place; but in hot dry weather and with species of plants which are more difficult to propagate, certain essential conditions must be secured in some other way. These essential conditions are a suitable, equable temperature; moisture and light. A good greenhouse, of course, is just the thing to meet these requirements, but as we can not all have this, we must try to secure the same ends by simpler and less expensive means. First, we may fill a flower pot with sand or sandy loam, plant our cuttings in it, place it inside of a larger one and fill the space between the two with moss to be kept always damp. A pane of glass covering the outside pot, or a bell glass or tumbler over the cuttings, in the inside pot, completes the miniature propagating house; or, second, we may take a small box (a cigar box for instance,) which we can cover with a pane of glass, put on the bottom of it a partly decayed fibrous sod, cover it with two inches of pure sand, water thoroughly and plant our cuttings. The pane of glass will keep the air moist within the box and the cuttings will not wilt. Some of them may "damp off," but if they be good, strong, healthy, growing shoots, few will be lost in this way. The cuttings may be from one to three inches long, and two or three leaves left on them, clipped to reduce their size, if very large.

Soil and Manure for Strawberries.

The best soil for most varieties of the strawberry is a sandy loam; but some, like Triomph de Gand, do best on a stronger and more clayey soil, or like the Kentucky on that which is light or sandy; while the Wilson and Longworth's Prolific, do well on any soil fit to grow anything. Leaf mold, wood ashes, lime and salt are all excellent applications to the land. The soil must be enriched, but large quantities of animal manure are to be avoided, if possible, as tending to a disproportionate growth of foliage and less fruit. When stable manure is to be used, it should be well rotted and composted with the other materials named, when ready to apply it.

The Orientation of Fruit Trees.

It has often been suggested that in setting out trees, they should be placed in the same position, with reference to the points of the compass, as that which they occu-

pied before transplanting, but no great importance has generally been attached to the matter. Lately, however, a writer in *Les Mondes* has given prominence to the idea by showing how the neglect of this precaution causes some trees to become weak, stunted and contorted. They become so, the writer believes, in the effort to recover their original "orientation." The theory is certainly a plausible one, and it is well for those who are setting out trees to make a note of it.

The President Wilder Strawberry.

The editor of the *Rural Alabamian*, Hon. C. C. Langdon, after two years' experience with this new variety is inclined to give it the first place on the list for all purposes. He adds that, "the plant is remarkably vigorous and healthy—the foliage withstanding the scorching effects of our summer suns better than almost any other variety we know. For so large a berry the plants are very productive, and maintain the crop full-sized to the last. The fruit is very large, regular in shape, of a beautiful scarlet color, and in quality, rich, high-flavored and delicious. Its keeping properties are excellent, thus enhancing its value as a market fruit."

Excerpts and Comments.

Peter Wylie No. 1 Grape.—We have from Dr. Wylie, July 31st, Mr. Meehan of the *Gardener's Monthly* says, a bunch of this new grape, which reached us in excellent condition. It weighed half a pound. It is a white grape, or, as some of our modern critics would say, a green grape. The berries are about the size of the Royal Muscadine, and the flavor so delicious, that if we could always depend on its doing as well as this in the open air, we might shut up our cold graperies at once. Though the skin is as thin, and the appearance much as a foreign grape, it still retains somewhat the firm flesh of the American parent; and it also has, but in a less degree, the peculiarity of dropping some of its berries easily from the stems, after a long voyage.

We are glad to quote such high authority in support of the opinion we have repeatedly expressed in regard to the superior qualities of this exquisite grape. If there be a grape superior to it growing outside of the walls of a grapery, we have not tasted it.

How to Develop Cauliflowers.—A writer in the *London Field* says that cauliflowers, being such enormous feeders, often fail, even on heavily manured ground, from a scarcity of their appropriate food. He comes to their assistance, without disturbing the roots, by what he calls "surface help," of which he says:

The first and best is a surface layer of fine farm-yard manure, six inches thick, over the whole of the ground occupied by the cauliflower; or, if this is impracticable, then half a barrow-load to every five plants. The effect of such dressings is wonderful; one can almost see the plants grow. The leaves seem to drink in the volatile ammonia, and the roots soon find their way into this new surface larder; the crowns fill in and swell out with amazing rapidity; and this despatch is the great secret of high quality.

Those who have a plenty of manure at hand, will do well to try this nice little top-dressing.

Natural History Applied to Agriculture.

Specimens of insects, securely packed, (according to instructions given in The Rural Carolinian, for April, 1872,) with letters of inquiry, entomological notes, etc., should be addressed, (post paid,) to Mr. Charles R. Dodge, Washington, D. C.

Scientific Names in Entomology.

A short time since I was in conversation with a young man who wanted to take up the study of entomology, but objected, very decidedly, to the hard names for insects; he said he had never been to college, knew nothing of Latin, and, as many others were like him in that respect, he thought English names for insects, that everybody could understand, would be much better. Many people hold the same opinions simply because they do not know the use of the scientific names.

We have common or English names now for many of our insects, and as these are given indiscriminately, and by any one who choses to give a name, it stands to reason, that in different localities an insect must be known under several names, and, consequently every time it is mentioned, if we use only its common name, it must be described minutely, or it will not be understood what insect the writer is talking about. Then, again we have the same name applied to different insects. The "June bug," in the South, is a green velvety looking beetle (*Gymnitis nitida,*) that the boys delight to torment by tying a string to one of its legs, for the purpose of seeing it "swing around the circle," and in some of the Northern States the "May beetles," (*Lachnosterna*) are called "June bugs"—perhaps because further North, the real June bug is not found, and the May beetles appear later—I have also heard "May beetles" called "dor-bugs" in New Hampshire, while in other places, the big reddish-brown beetle with large jaws, (*Lucanus dama,*) bears that name, and this insect in turn, when it gets to Ohio, is called "pinching bug;" and so on through the whole catagory of common names.

"The potato bug" is the common name of an insect belonging to the *Chrysomelidæ*, which destroys the potato in the West, and the name is likewise given, in the Eastern States, to another totally different insect in the same family. Then, in the family of "blister-flies," we have several species that feed upon the potato and they are all, likewise, called "potato bugs." Now scientific names obviate all this difficulty. We call the Western species that feeds upon the potato, *Doryphora decem-lineata,* and those in the East *Lema trilinata, Epicauta nittata,* &c., because they belong to the three *genera Doryphora, Lema* and *Epicauta,* which were first laid down, many years ago, by the earlier workers in the science. The first name always indicate the genus, which may include fifty other species—for example, *Doryphora,* and any naturalist knows as soon as he sees the name, whether he has seen the insect or not, just where it belongs, while the last name—*decem-lineata*—denotes the species, or tells what particular *Doryphora* he is reading about.

Another reason for giving scientific or Latin names, (though many are from the Greek) is that entomologists in all lands may be able to communicate with each

other. American common names would puzzle a German entomologist, quite as much as his German common names would an American entomologist, but with a name in a language that is recognized the world over, there can be no mistake as to what insect is meant.

The scientific names may be a little hard to pronounce, but, nevertheless they are necessary for scientific accuracy, and if the common name is given at the same time, where one exists, the insects will then be known to all.

Answers to Correspondents.

"Rat-tailed" Pupa.—"Subscriber," Mobile, Ala. The singular pupa which you say was found on the street near a flower garden, if allowed to remain alive, would have produced a two-winged fly belonging to the genus *Eristalis*. All the larvæ in this genus are provided with an appendage resembling a tail, and are known as Rat-tailed larvæ; they are aquatic in habits and use this tail as a sort of respiratory tube, protruding it out of the water. The pupa is generally found in the earth, and in addition to the tail is provided, on the opposite end of the body, with four short horns. The insects are met with flying about flowers, the pollen of which they scoop up with their maxillae. It is impossible to name the species from a dead pupa.

Grape-Vine, Apple Galls.—Mrs. P. M. E., Scotland Neck, N. C. The excrescences which you find in such numbers on many of your grape vines, are formed by one of the gall-gnats, probably a species of *Cecidomyia*, and if you cut one of the galls open at the present time, you will find the larvæ which are minute bright yellow worms. The galls are green, globular, and are covered with a sort of down, that has even caused them to be taken for apples, one having been reported in a Virginia newspaper as "a vegetable phenomenon, an apple growing on a grape-vine." We shall keep the galls till next spring, to secure the perfect insect. It is called *vitis pomum*.

"Beautiful Deieopeia,"—E. J. M., Marion, Miss. The "fly," or moth, sent by you for identification, and found in great numbers in your cotton field, will not injure your cotton, at least, it has never been known to do so. The larvæ were found, during the months of July and August, in Maryland, very abundant in the seed pods of rattle-box (*Crotalaria*) by Mr. Glover, and he says, that the worm eats a large hole in the shell of the pod, which it enters, and hidden from sight quietly devours the seeds. The larva is yellow with black and white rings, the chrysalis is black and yellow, and remains a chrysalis a week or ten days. The fore wings of the moth are of a yellow color, beautifully and irregularly marked with white, in which appear numbers of black spots, while the hind wings are rose colored with an irregular edging of black. The name of the insect is *Deicopeia bella*.

Insects in Alcohol.—W. W. A., Stateburg. Many thanks for your letter concerning the aquatic larvæ, which you forwarded in the summer, and which were spoiled on the journey.

The caterpillars which you found boring into the heads of your cabbages, and

riddling the outer leaves, were the larvæ of *Plusia brassicæ*, the cabbage pest of the South, and which has been mentioned several times in this Journal. The minute green worms found on collard plants we could not identify; the best way with such specimens is to send them alive with their food plant, and we can then change them and get the perfect moth, after which it is an easy matter to name the species. Aquatic larvæ, however, that are liable to spoil in transit are best preserved in alcohol. The two caterpillars in the cone of paper were likewise two young and small to determine.

The large green caterpillar, with the "crown of red horns, and black tips, in a double row around his head," and found upon a persimmon tree, is the "hickory horn devil," *Ceratocampa regalis*. The pupa "makes up" in earth, is black, and develops a beautiful orange-red and olive colored moth spreading four or five inches from tip to tip of wings. The pupæ, in the bottle, were doubtless those of *Plusia brassicæ*.

Applied Chemistry and Mineralogy.

All communications and notes of inquiry intended for this Department, as well as specimens of soils, fertilizers and minerals for analysis or description, should be addressed to Charles U. Shepard, Jr., M. D., No. 20 Broad street, Charleston, S. C.

Soils.—II.

At the conclusion of an article upon soils and their physical analysis, in the August number of this Journal, the writer signified his intention of resuming the consideration of various Southern soils, more particularly as regards their behavior when submitted to the silt analysis. In pursuance of this subject, the following additional analyses of Mississippi soils are presented to the attention of those readers of The Rural Carolinian who are interested in agricultural chemistry. The soils analyzed form a portion of a series very carefully selected, and kindly furnished by a gentleman residing in Louisiana. The results of the other analyses will be submitted as soon as they are completed.

The soils given below, are the top and subsoil from the virgin prairie land on the Chatworth plantation, Red River. The top-soil is a fine, soft and dark soil, which, when air-dried, readily passes through the 1 m. m. apertures of a sieve. The subsoil is likewise soft and fine, but has a slightly yellowish tinge. The analyses, executed by Mr. D. C. Anderson, in the manner previously described, afforded the following results. A slight modification of the method previously adopted, was instituted in these two analyses, which was to evaporate the contents of the funnels to dryness, thus securing that portion of the soil which was taken into solution, or was in such fine physical sub-division as to run through the filters.

The preliminary examination of the top-soil proved that it contained:

	p. c.
Moisture, expelled at 125° C.	2.9484
Organic matter, expelled at low red heat	7.0388
Fixed ingredients	90.0128
	100.0000

The *silt analysis* of the thoroughly air-dried TOP-SOIL, gave:

There remained in funnels.	The percentage which each sediment, dried at 125°c., forms of the amount of soil taken for analysis.	The percentage which each sediment, subjected to a low red heat, forms of the amount of soil taken.	The difference in the two determinations, *i. e.* the amount of organic matter in each sediment.
	p. c.	*p. c.*	*p. c.*
A. and B.,	72 2050	67.5783	4.6277
C.,	14.3733	13.2433	1.1300
D.,	2.9666	2.6416	0.3250
Receiver,	7 3999	6.2206	1.1793
Total,	96 9448	89 6838	7.2620
Loss on drying soil at 125°c.,	2.9484		
Loss during process, - -	1.1068		
Total, - - - - -	100.0000		

It will be observed that there is a slight gain (amounting to 0.2232 p. c.) in the determination of the organic matter, as obtained from the amounts in the separate sediments. This gain is, more likely, due to the slight variation in composition, which exists even in such homogeneous soils as those under investigation. The examination of the amounts of organic matter, and fixed ingredients in each sediment, showed that they had the following composition:

Are contained - - - -	In A. and B.	In C.	In D.,	In Receiver.
	p. c.	*p. c.*	*p. c.*	*p. c.*
Organic matter, - - -	6.41	7.87	10 96	15.94
Fixed ingredients, - - -	93.59	92.13	89.04	84 06
Total, *i. e.* the soil dried at 125°c,	100.00	100.00	100.00	100 00

These results show that the sediments in the different funnels and receiver vary but slightly in their composition, so far, at least, as the amounts of organic matter and fixed ingredients are concerned; and the slight variation which does exist, demonstrates that the lighter portions of the soil, *i. e.* those which are more readily carried off by the running water, contain a greater proportion of organic matter. On considering the deposition of the organic matter, and fixed ingredients in the different funnels, the following is obtained:

Are deposited in funnels.	Percentage which the organic matter of each sediment bears to the total amount of organic matter in the soil taken for analysis.	Percentage which the fixed ingredients of each sediment bears to the total amount of fixed ingredients in the soil taken for analysis.
	p. c.	*p. c.*
A. and B.,	63.72	75.35
C.,	15.56	14.76
D.,	4.48	2.95
Receiver,	16.24	6.94
Total,	100.00	100.00

The amounts of organic matter and fixed ingredients are, in this and the following analyses, taken from the total amounts of each, as determined by the addition of the analytical results for the different sediments. It will be observed from these last results that about three-fourths of the soil remained in the first two funnels; accordingly the soil stands between the sea island cotton and the rice soils in the ease with which it is carried off by running water.

Silt analyses of SUB-SOIL from the same tract.

The preliminary examination showed that the air-dried sub-soil contained:

	p. c.
Moisture expelled at 125°C.	0.9467
Organic matter, expelled at low red-heat	4.4833
Fixed ingredients	94.5700
Total	100.0000

The silt analysis afforded:

There remained in funnels.	The percentage which each sediment, dried at 125°c., forms of the amount of soil taken for analysis.	The percentage which each sediment, subjected to a low red-heat, forms of the amount of soil taken for analysis.	The difference in the two determinations is the am't of organic matter in each sediment.
	p. c.	*p. c.*	*p. c.*
A. and B.,	80.4066	78.1500	2.2566
C.,	9.3933	9.0683	0.3250
D.,	3.3666	3.1400	0.2266
Receiver,	6 5216	4.6483	1.8733
Total,	99.6881	95.0066	4.6815
Loss on drying soil at 125°c.,	0.9467		
	100.6348		

It will be observed that the sum of the weights of the different sediments dried at 125°C., added to the loss sustained by drying another portion at this temperature, slightly exceed 100 p. c.; as also that there is a slight gain in the sum of the amounts of the organic matter in the different sediments. These are, however, quite small and can be partly attributed to the difficulty in obtaining exactly similar samples.

The composition of the different sediments is:

The sediments consist of	In A. and B.	In C.	In D.	In Receiver.
	p. c.	*p. c.*	*p. c.*	*p. c.*
Organic matter,	2.81	3.46	6.73	28.73
Fixed Ingredients,	97.19	96.54	93.27	71.27
Total,	100.00	100.00	100.00	100.00

It will be observed that with the exception of the last sediment (in the receiver) the rest contain nearly the same proportion of organic matter and fixed ingredients. The lightest portion of the soil, *i. e.* what passed over into the receiver, consists of over 1-4th organic matter. Finally the organic matter and fixed ingredients contained in the soil are distributed in the following proportions through the various funnels and receiver:

Are deposited in	The percentage which the organic matter of each sediment bears to the total amount of organic matter in the soil taken for analysis.	The percentage which the fixed ingredients of each sediment bear to the total amount of fixed ingredients in soil taken, etc.
	p. c.	*p. c.*
A. and B.,	48.21	82.26
C.,	6.94	9.55
D.,	4.84	3 30
Receiver,	40.01	4.89
Total,	100.00	100.00

By these figures is shown that about one half of the organic matter is left in the first funnels, together with the great bulk of the fixed ingredients; while two-fifths of the organic matter is carried off by the running water into the receiver.

A comparison of the analytical results in these last investigations is interesting. In the first three sediments of each the proportion between the organic matter and the fixed ingredients undergoes no serious variation; the amount of organic matter in every case being small. It is in the contents of the receiver that a marked difference is observed. In the analysis of the top-soil 16 p. c. of the organic matter are found in the last sediments, and in the subsoil 40 p. c. The inference, then, appears warranted that the organic matter of the top-soil is intimately commingled and, perhaps, chemically combined with the fixed ingredients; while in the subsoil a large part of the organic matter is readily separated from the fixed ingredients as a consequence of the lack of these conditions. In explanation of this circumstance may be adduced the following: The organic matter of the subsoil has its origin partly in the rootlets of plants extending down from the top-soil, and is partly owing to the organic matter brought into it, in solution, in the soil-water percolating through from above. The conditions for the intimate chemical union of this organic matter with the fixed ingredients of the subsoil are less powerful than in the top-soil, since atmospheric influences here less obtain. Hence it would be apt to remain, to a considerable extent, simply adhering to the particles of the subsoil, but liable under the action of running water to be separated from it.

At another opportunity the writer proposes to publish other silt analyses of Southern soils. In presenting the foregoing to the attention of Southern planters, he hopes to have succeeded in giving an intelligible and, sufficiently, comprehensive description of the object and method of the mechanical analysis of soils. The analytical results are interesting, since they serve in extending the knowledge of some most important soils, and aid, as examples, in the consideration of what precedes. It is hoped that they may stimulate the planters of the South to an active co-operation in the field of agricultural chemistry.

THE CHEMICAL ANALYSIS OF SOILS.

Chemical analysis of soils may be divided into two classes, ultimate and practical. By the *ultimate* analysis is understood a determination of all the ingredients in a soil, and their respective percentages. Under the *practical* analysis is implied an estimation of the proportions of those ingredients which are valuable for plants, and also in a condition suitable for appropriation by them. Even a superficial knowledge of vegetable physiology and agricultural chemistry enables the planter to decide which method he should adopt. Under certain circumstances his chief question is, does the soil contain the ingredients of plant-food in sufficient quantity for the production of a vigorous and remunerative crop? Then the practical method, as above defined, affords him the necessary information concerning the degree of fertility of any field, or in case a deficiency in nutritive ingredients is detected, he will be directed to the proper replenishment and enrichment. Thus the practical chemical analysis tends to answer the immediate wants of the farmer. On the other hand, the *ultimate* analysis looks to the future necessities, as will be better perceived from what follows.

Although the science of agricultural chemistry, at present entering upon a vigorous youth, has accomplished much in the study of soils and growing crops, there still remain two vital questions, as yet but inadequately solved; they are, what are the processes which assist and enable the plant to abstract its food from the soil, and what analytical method for the estimation of such available food lies at the disposal of the chemist?

It will be interesting to note a few important facts involved in the solution of these problems, and bearing especially on the consideration of the chemical analyses of soils. The processes which serve the plant in acquiring its soil-food may be considered under three heads: 1. Physical forces, exerted by the soil-water; 2. Chemical forces, the result of chemical affinity, producing the decomposition of mineral combinations; 3. Physiological forces emanating from the plant itself.

1. *Physical forces.*—Without dwelling upon those processes of disintegration and decomposition, which are due to the presence of moisture and to the changes of temperature, and by which the rocks are constantly being changed into soil, it is necessary for the present purpose to call attention to the physical action of the soil-water as solvent, and this apart from its chemical function. The water contained in the soil, *i. e.*, the soil-water, holds in solution variable quantities of fixed ingredients which have been extracted, almost entirely, from the soil. The amount of water, the length of its action on the soil, and the amount of soluble matter contained in the latter determine the quantity abstracted. The prolonged treatment of any soil with a large bulk of water causes the solution of a very considerable quantity of its nutritive ingredients. Whereas the investigation of drain-water, *i. e.*, the water which percolating through the soil, is gathered in tile or other drains, has shown that the quantity of soil thus dissolved and carried off is exceedingly small. This result may be attributed not only to the small solubility of the soil-ingredients in water, but also the fixing and absorbing force exerted by the soil upon plant-food in solution. Thus, prolonged treatment of soils with a large quantity of water, afforded the following results, (How crops feed, page 312:*)

The treatment with water dissolved:

From 100.000 *parts.*	*Parts.*
Wet, peaty soils	400—1400
Poor, sandy soils	40— 50
Rich, or richly manured soils	50— 150

The dissolved ingredients consist chiefly of lime, soda, chlorine, silica and organic matter. Magnesia, potash and sulphuric acid are but slightly extracted phosphoric acid, next to none. On the other hand, drain-water appears to contain but small quantities of dissolved matter, varying from 13.8 to 34.8, (E. Wolff,) 15.3 to 42.5, (Krocker,) 21.23 to 72.98, (Way,) parts solid ingredients in 100.000 parts water.

* The writer takes pleasure in referring to this exceedingly interesting work by Prof. S. W. Johnson, of Yale College, which ought to be studied by every intelligent agriculturist. Prof. J. has, as doubtless most of the readers of THE RURAL CAROLINIAN are aware, published two of his series of works upon Agricultural Chemistry, viz: "*How crops grow*" and "*How crops feed.*" The high scientific and scholarly attainments of their author have been most clearly demonstrated in the able manner in which he has treated these difficult subjects, having succeeded in presenting to their readers, in a lucid and concise form, the results of his own valuable investigations, together with those of other scientists, both of this country and Europe.

Although the water of the soil dissolved the important ingredients of the soil to but a very small degree, still, since its volume is so enormous, it is contended that it may provide the great bulk of that nutrition which comes from the soil. On this still open question, Prof. Johnson remarks: "Assuming, then, that all the soil-food for plants exists in solution in the water of the soil, the question arises, does the water of the soil contain enough of these substances to nourish crops? In case of very fertile or highly manured fields, this question, without doubt, should be answered affirmatively. In respect of poor or ordinary soils, however, the answer has been, for the most part, of late years in the negative." The capability of the soil to furnish soluble matter to the soil-water appears to be very great, as is shown by the results of treating the same portion of soil to successive portions of water. This want of exhaustion depends on the limited solubility of the substances themselves, as well as upon the gradual and constant action of chemical forces in the soil, by which insoluble ingredients are converted into soluble compounds.

2. *Chemical forces.* Chemical affinity under the influence of moisture, atmospheric air and heat, brings about a decomposition of mineral forms in the soil, by which means insoluble matter is changed into soluble, and worthless material into available. These decompositions are due to the substitution of other substances for some of the ingredients of the mineral compounds of the soil. Such changes may be treated if according as the mineral masses are decomposed by inorganic or organic substances. Water charged with carbonic acid, or containing alkaline salts in solution exert a much greater dissolving effect than pure water. The use of common salt (the chloride of sodium) has been found advantageous even for those crops which contain no appreciable quantity of either chlorine or sodium. In this case the good effect of the salt has been indirect; taken place through the substitution of its ingredients for some really nutritive substances, previously locked up in mineral compounds, and otherwise useless as plant food. The action of the sulphuric acid in land plaster becomes, chiefly in this manner, of benefit, since nearly all soils contain that small quantity of this ingredient which is necessary for the growth of the crop. The part which the organic matter of soils plays in the liberation of plant food has been made the subject of extensive study. It, appears, at least where the abundant presence of oxygen favors the oxidation of the organic matter, that it is converted into organic acids which slowly corroding the mineral ingredients of the soil, unite with their valuable bases, (lime, magnesia and potash,) and set free phosphoric and other indispensable acids.

3. *Physiological force.* It is worthy of consideration, while the assimilation of soluble salts must be the easiest for the plant, that its food, even in a hard and mineral form, can be attacked and appropriated by the rootlets.

Experiments have established two facts: 1. That the rootless of plants in need of certain articles of nutrition, can corrode polished mineral surfaces, and abstract from these the requisite ingredients. 2. That the rootlets of certain plants contain and do secrete acid juices which are capable of taking into solution nutritive substances insoluble in water.

Having thus considered the physical, chemical and physiological forces which aid and enable the plant to acquire its soil food, it is proposed in the succeeding number, after treating still farther on this subject, to proceed to the discussion of the different methods of the chemical analysis of soils. S.

Laboratory for Analytical Chemistry, 20 Broad Street, Charleston, S. C.

Condensed Miscellaneous Correspondence.

BRIEF COMMENTS.

Editor of The Rural Carolinian:

Your September number has been received and read with interest. If every farmer in the State would take more of the rural feast and less of political hasheesh, it would be far better for the country, in more ways than one.

"*Our Danger and our Duty.*"—Apropos, we passed a railroad depot a few days ago; the first bale of new cotton was on the platform, and two old cows were sampling. Who will be blamed for short weight at the end of the line? And, by the way, a large pile of Charleston fertilizers was on the platform, "wasting their sweetness on the desert air." The sacks were badly torn. Whose fault is this? Planters complain very much, and not without reason, at the condition in which fertilizers are received. It is to the interest of the manufacturer to put up his article in good order, and he should try to secure a little gentler handling on the railroad; but railroads are corporations and "corporations have neither bodies to be kicked or souls to be damned."

While on the subject of railroads—if Charleston expects to retain her back country trade, it is high time she was modifying her rates of transportation. When the Air Line gets in operation you may rest assured that a new outlet will be found for many of our products. The iniquitous charges upon the South Carolina and Greenville and Columbia Railroad have driven off no little custom from the "City by the Sea." In old times, when the merchant transported his produce and his goods by wagon, he calculated 5 per cent. would place his goods upon his shelves; now it requires from 10 to 12 per cent., and the despatch is hardly compensated by the loss and damage in handling. The freight on a package from Columbia to Alston is as much as from Charleston to Columbia. The freight of many packages from Charleston to a back county town is as much as the article costs in market. The writer of this article paid $1.50 freight on a little box which cost him in Charleston $1.25. As the stockholders receive no dividends, it is difficult to understand it. There must be a hole in the hog trough. Somebody is "killing the goose for the golden egg."

"*The Grasses and Grass Culture in the South.*" Well timed and to the point. The old veteran will not give it up and is determined to die in the harness. Dr. Philips' experience is worth treasuring up. The great mistake of our people has been and is, that they expect clover to grow like crab grass and foxtail, and when they do make a success they put every thing from the horse to the guinea fowl upon it, and keep them there until it is too late.

"*The loneliness of farming life in America.*" Dr. Holland writes well on almost any subject; but it is evident that his ideas of farm life are from the stand-point of the "study." Rural life is rural life; and young people flock to the cities not for healthful social privileges, but to grow rich fast and easily, and to enjoy the gas light and glamor of city life. This talk about the isolation of farm life is all bosh.

"*The credit system and its effects.*"—"Pine Stump" has struck the right vein, but he might as well whistle jigs to a mile post. We are the most hopeful people in the world (we cotton planters) and always expect to pay out *next year* and then make a rise. Jam Satis.

BANKING POTATOES.

Editor of The Rural Carolinian:

I do not profess to be a "Practical Farmer," but have a plan for saving potatoes, which, having proved successful with me, I will give M. L. Baldwin or other readers the benefit of it. First of all, procure a good supply of clean, dry, long-leaf, pine straw, and one bushel of clean, dry sand, to every eight bushels of potatoes you wish to bank. This should be done some time previous to digging, or the straw and sand may be wet when needed. Have these kept ready for use in a dry place. Allow the potatoes to remain undug for several days, or a week, after the vines are killed by frost, in order that they may become less sappy, and may grow as long as possible. (They are said to grow faster after the vines are killed than before.) Be sure, however, not to allow them to freeze in the ground. Watch the weather, during this interval, and if there are indications of bad weather, dig immediately. Dig as quickly as possible, and endeavor to do so when the ground is not too wet. Have the potatoes carefully gathered up into baskets, assorting the small and cut, from the large ones, and have them put away in a dry house, placing dry straw under and over them, and let remain two or three days, to allow them to air. The cut and small potatoes may be used first, but must be kept separate and not banked with the others. Select a dry spot for your banks. Arrange them in straight rows, as it will be more convenient to shelter them. Allow eight or ten feet square for each bank. Level the earth for the base of each bank, and raise it a few inches with the earth, if you are not sure that the spot is quite dry. Have two bushels of potatoes, placed in middle of each bank, upon these sprinkle one peck of the dry sand, then pour upon each pile two bushels potatoes and one peck sand, and continue this until you

have from twenty-five to forty bushels of potatoes to each bank, keeping them piled up as high as possible. Then cover each bank with enough dry straw to be of two inches thickness when settled (say four or five inches of loose straw.) Dig a circular ditch around each bank about fifteen inches from the potatoes—about one foot deep and two feet wide, placing the earth upon the bank until it is two or three inches thick—leaving the top open for ventilation. The aperture should be about three inches wide. Have the banks well sheltered and the ditches opened to convey the water away.

By this plan I have kept my potatoes sound and sweet, seldom finding as many as a peck of rotten ones to each bank, but it does not keep "cuffy" from sampling them occasionally. Will some one be kind enough to give us a remedy for this? SMALL FARMER.

Darlington, S. C.

We have several other articles on banking potatoes, but as this correspondent's plan is a good one, in the main, it will suffice for the present.

ANALYSIS OF SOUTHERN SOILS.

Editor of The Rural Carolinian:

I observe in your issue for September, an article on soils and soil analysis, by Dr. Shepard, in which it is stated that with the exception of a few analyses mentioned by the writer, he is "not in possession of any subsequent analytical investigations of Southern soils."

If "Southern" is not merely a misprint for "South Carolina," I beg leave to call the attention of Dr. Shepard to nearly 800 soil analyses made by Dr. R. Peter, of Kentucky, in connection with the Geological Surveys of Kentucky and Arkansas, and to twenty-two published in my Mississippi report of 1860, which have since been increased to nearly 200, besides a dozen Louisiana soils.

Dr. Peter's analyses were severely commented upon by Prof. Johnson, of Yale, in an article published in the *American Journal of Science*, for September, 1861. Considering some of Prof. Johnson's objections as too sweeping, and others as avoidable, I nevertheless continued the work, and in a paper read at the late meeting of the Association for the Advancement of Science at Dubuque, have given my reasons for dissenting, in some degree, from Prof. Johnson's views. The publication of the latter seems to have almost completely estopped the chemical analysis of soils in this country, from that time forward, at least in connection with the State Surveys, (excepting the one under my charge.) This, I think, is greatly to be regretted, and I rejoice to see Dr. Shepard reviving this important class of investigation in the good State of South Carolina. Hoping that he will persevere therein and assuring him of active sympathy in the Mississippi Valley, I am yours, very truly,

EUG. W. HILGARD.

University of Mississippi, September, 1872.

MUSHROOMS.

Editor of The Rural Carolinian:

During my travels in Europe, in my young days, I learned to be very fond of the mushrooms, but for many years was afraid to try them here at home. When I did so, I used what is considered an infallible test, viz: stirring them with a silver spoon. If they were good the spoon remained white, but if they were poisonous the spoon would *turn black*. It is also an established fact that toadstools, and other poisonous fungi, cannot be raised *artificially*.

The circumstance brought to my recollection is, that one spring I made a cow-pen for making compost, litered it moderately with pine trash, (short leaved pine,) folded my cattle in it for about one week, and then, for some unrecollected reason, changed my plan and moved my cow-pen elsewhere, leaving the littering undisturbed. Early in the winter, passing on the road about one hundred yards from this pen, I noticed something white, and when I went to it found, to my surprise, an abundant crop of mushrooms, of which I immediately gathered about three bushels, out of which was made mushroom catsup, pickles and sauces, until I was sickened with the smell of mushroom. I tried this experiment once afterwards with equally satisfactory results, and during the war I found quantities growing in the old cow-pen of a neighbor who was afraid of them. R. C.

FERTILIZERS.

Editor of The Rural Carolinian:

Since the "laying by" of the crop I have prospected some thousands of acres of cotton in Union and Chester Counties. On the clay lands the stands are not good, and the plant is small. On the light lands, where there is plenty of sand and vegetable matter, the cotton is fine. The almost universal conclusion I think is that fertilizers (I mean chemical,) will not pay on heavy clay soils.

Their application has told well this year because the grass was easily kept under, and the young cotton plant got the full benefit of the fertilizer.

Barring the increased use of fertilizers, I am sorry to say that I saw few evidences of improvement in my travels. The same old tumble down barns, gin houses, corn cribs and stables. Day lights through the barns and cribs while the wheat straw lay rotting in heaps, where it was left by that modern curse,

a travelling thresher. All the inside fences moved out to repair the outside lines, miserable shanties by the way-side surrounded by a brush fence and a truck patch; the old pine fields all being cleared up for cotton; poor broken down horses by the road side, turned out to shift for themselves. The freedman's horse is fast becoming an *institution*. ***

August, 1872.

THOSE GOUBERS.

Editor of The Rural Carolinian:

I experimented with the gouber in the year 1855–'56, and according to the results, I preferred the common pea nut or pinder for my soil. The gouber may prove best on light, deep, sandy soils, as the pinder on such soils will produce only hulls without kernels.

I think I shall prefer the chufa or ground almond to either for hogs. I intend giving all a fair trial and will report, when satisfied, on the merits of each. W. E. Freeman.

Olustee Creek, Ala.

EXTRACTS FROM LETTERS.

"A Southern Woman,"—we are glad to find the ladies thinking and writing on agricultural subjects—desires us to suggest the organization of a corps of men, who might be called "Irrigators," to go through our country, select such lands as are capable of being irrigated and prepare them for irrigation. The owners of such lands, she adds, could well afford to pay for their preparation, if they could equal Dr. Parker's 200 bushel per acre.

Next she says:

Could you not call upon the mechanical genius North and South to invent a cotton seed mill that would be available on every plantation? So cheap that every farmer could own one to grind his cotton seed into meal cake and save the oil for market. I have thought that perhaps the iron cane mills if they had a hopper around them to hold the seed, something like a coffee mill, might perhaps crush the seed. But I am nothing of a machinist, and only throw out these crude suggestions. It is said that woman's perceptive faculties are keener than those of man, but man has more solid judgment. So I submit this to your superior judgment.

——R. C. propounds the following queries which we respectfully refer to the editor of our chemical department:

"In your article on Earth-Closet Manure muriatic acid is recommended for fixing the ammonia, would not sulphuric acid answer as well and if it would, would it not be best to recommend the solution of sulphate of iron (common copperas) as better known to almost every one, less dangerous and costing little if any more? Would not the iron also prove of benefit to very many plants? What does it cost per pound by the barrel? I have used it with success to correct the unpleasant smell caused by eating asparagus. What does muriatic acid cost per pound by the carboy or smaller quantity?"

——Gen. John S. Goe, Brownsville, Pa., wishes to state, for the benefit of persons in the Carolinas and Georgia who have sent him money for stock, which they desire held for a chance to send them in a lot to one or more points in the South at a small cost, that if a sufficient number are ordered he will send a man out with them. He adds:

This arrangement is for the accommodation and benefit of your readers and not for my own. Should any one want stock from another flock than mine I will, on receipt of the money, attend to purchasing according to their directions, free of any charge; and to the gentlemen who want the brood mares and colts, those who want the Durham cattle, the Leicester sheep, and the Cashmere goats, I would say that, perhaps, we can arrange to accommodate all.

——W. E. Freeman, Olustee Creek, Ala., writes as follows about what he calls "a novel cotton:"

I have a small patch of very strange looking cotton. The stalks, leaves and forms are a dark red, similar, if not identical, in color with the vines of what is known as the negro killer potatoes. Can the editor, or any of the readers of The Rural Carolinian, give us any satisfactory account of this cotton? It is claimed here to be rust-proof. Is it so or not, and is it an old or new thing? It is new to me.

INQUIRIES AND ANSWERS.

"Low Country." For a lawn, you can hardly do better than to set it with Bermuda grass, sowing at the same time a mixture of Orchard grass, Blue grass, and White clover. No one kind of grass that we are acquainted with will give your grounds the handsome green carpet you desire, the year round.

——J deH., wishes to engage in bee-keeping in the Low Country, but feels very uncertain about the practicability of making it a profitable business, and desires any person who has had experience bearing on the point, here in our coast region, to report results through The Rural Carolinian. We earnestly join in the request.

——"Walter." "Darlington's Weeds and Useful Plants," would serve your purpose better than any other single book. On Entomology, Harris' "Insects Injurious to Vegetation," and Packard's "Study of Insects" would put you in the way of learning something about insects.

——Miss K. N. F. The box of Indian River Grapes, shipped August 20th, reached us September 12th. It is hardly necessary to add that they were entirely spoiled, much to our regret, for they are, apparently, of a variety entirely new to us; probably, however, a form of the Bullace, or Southern Muscadine, (*Vitis rotundifolia, Michx.*)

——L. A. B. desires us to ask our correspondent "L. H. L.," (December number, 1870, of RURAL CAROLINIAN,) if he knows where a thoroughbred Derby Game Cock, that will do to raise from, can be had. Will "L. H. L." respond?

——We have an inquiry for a Landscape Gardener, or a person qualified to lay off properly a rural cemetery. We shall be happy to put such a one in communication with the party making inquiry. Address the editor.

——"A Small Farmer" wants a remedy for Staggers in Hogs.

PATRONS OF HUSBANDRY AND AGRICULTURAL SOCIETIES.

TO MANUFACTURERS AND OTHERS.

A circular has been issued by the Executive Committee of the National Grange P. of H., addressed to manufacturers of Agricultural and Domestic Implements, Machinery, etc., from which we make the following extract:

To enable the members of the Order to purchase implements and machinery at as low cost as possible, by saving the commission usually paid to agents, and the profits of the long line of dealers standing between the manufacturers and the farmers, the Executive Committee of the National Grange desire to publish a list of all establishments that will *deal directly* with State and Subordinate Granges. The list will be regarded as *strictly confidential*, and one copy only will be furnished to each Grange.

Large orders can thus be made up by the consolidation of the orders from Granges in the same State or vicinity, and special terms for freight, etc., arranged with transportation lines, thereby affecting another large saving to the purchaser.

Manufacturers of all articles used by farmers who desire to avail themselves of this means of disposing of their products directly to the consumer for cash, thereby avoiding the losses incident to the credit system, or the storing of goods in the hands of commission merchants and agents, are invited to send their catalogues and wholesale price list to, and to correspond with, O. H. KELLY.

Sec'y of the National Grange, Washington, D. C.

SILVER FAIR PREMIUMS.

In one or two instances, we have heard of complaints in reference to articles distributed as premiums at the Fairs in this State, which we believe are guaranteed to be silver, and which we are satisfied that chemical tests would show to be so. The complaints probably grew out of a lack of correct information in regard to the action upon the highly polished surface of the ware of atmospheric impurities, and other substances with which it necessarily comes in contact. New articles brightly polished or burnished are more susceptible, and attract the impurities of the atmosphere, tarnish and change color, from salt eggs, salt butter, tomatoes, and other vegetable acids, much more readily than old articles of silver that have been in common use, and have lost their polish.

The arsenic used in bleaching paper and card board; the sulphur in flannel and in India rubber articles; matches manufactured from either sulphur or phosphorus; water impregnated with different minerals; mercury taken into the system, (and coming to the surface in perspiration,) and numberless unthought of causes tend to the discoloration of silver and gold, and give rise to impressions of a want of purity. Coin silver is 900-1000 fine; sterling silver 925-1000, fine. Either is regarded and spoken of as pure silver, but neither silver nor gold is ever manufactured into any article in its pure state.

HOW IT WORKS.

Brother W. J. Pringle, Worthy Master of Concord Grange, No. 39, Concord Township, Sumter County, S. C., writes as follows, under date of September 12th:

Dear Sir and Brother: Pursuant to advice from you, nine members of Sumter Grange, No. 3, withdrew and organized a Grange here with your correspondent as Master, and A. J. Chandler as Secretary. We organized on the 3d of July, and now number over thirty members. We shall certainly gather in every good man in the township.

The Grange has purchased bagging and ties for its members, at a saving of at least five cents a yard, and also flour, saving about four dollars a barrel. Manufacturers and others evidently see the handwriting on the wall.

Paying a visit to some friends at Mouzon's Bridge, Williamsburg County, last week, I found them all "red-hot" for the Patrons, and at a dinner gathered the material for a Grange. They are wanting a Deputy to organize them.

Fraternally yours, W. J. PRINGLE.

STATE GRANGE OF SOUTH CAROLINA.

The State Grange P. of H. of South Carolina will be organized at Columbia on Wednesday, October 9th. All Masters, Past Masters and Deputies have been duly notified and will govern themselves accordingly. Charter members of the Order, and all who have received the fourth degree can be present. The Order is now strong in this State; strong in character and influence as well as in numbers, and the meeting in Columbia should be an index of the status and vitality of this new and benign power which has arisen in the land. Let us have a full meeting and show the world, not by words merely, but by earnest action, that this is no holiday affair, but a living working organization.

NEW GRANGES IN SOUTH CAROLINA.

Since our last issue, the following new Granges have been reported:

Plowden's Mill Grange, No. 65, Manning, Clarendon Co.; A. J. Tindall, M.; J. N. Hodge, Sec.

Monticello Grange, No. 66, Monticello, Fairfield Co.; J. N. Davis, M.; H. M. Zealy, Sec.

Spartanburg Grange, No. 67, Spartanburg C. H., Spartanburg Co.; Jno. H. Evins, M.; O. H. Kerby, Sec.

Tyger River Grange, No. 68, Spartanburg C. H., Spartanburg Co.; S. C. Means, M.; S. D. Millar, Sec.

Greenville Grange, No. 70, Greenville C. H., Greenville Co.; Alex. McBee, M.; W. A. McDaniel, Sec.

Anderson Grange, No. 71, Anderson C. H., Anderson Co.; J. P. Reed, M.; J. A. Hoyt, Sec.

Abbeville Grange, No. 72, Abbeville C. H., Abbeville Co.; J. F. C. Duprée, M.; T. P. Quarles, Sec.

Cooper Swamp Grange, No. ——, Edisto Township, Orangeburg Co. (P. O. Midway, Barnwell Co.); Benj. Pooser, M.; S. T. Izlar, Sec.

Indiantown Grange, No. —, Indiantown, Williamsburg Co., (P. O. Kingstree,) Jas. McCutchen, M.; W. D. Knox, Sec.

SOUTHERN FAIRS.

South Carolina, State,	Columbia,	Nov. 4–8.
Georgia, "	Atlanta,	" 8–11.
Cotton States,	Augusta,	Oct. 22–26.
Mississippi, State,	Jackson,	Nov. 11–16.
Virginia, "	Richmond,	Oct. 29—Nov. 1.
North Carolina, State,	Raleigh,	Oct. 15–18.
The Carolinas,	Charlotte, N. C.,	Oct. 22–26.
Cape Fear,	Wilmington, "	Nov. 12–15.
Maryland, Institute,	Baltimore,	Oct. 8–11.
West Alabama,	Eutaw,	Oct. 22—.
Alabama and Georgia,	Eufaula, Ala.	Oct. 15–20.
Columbus, Ind. Ass.,	Columbus, Ga.,	Oct. 29—
Cherokee County.	Rome, Ga.,	Oct. 8–11.
Darlington Co.,	Darlington C. H., S. C.,	Oct. 3.

PATRONS OF HUSBANDRY ITEMS.

Among the early triumphs of the Patrons of Husbandry is recorded the fact that a Grange of the brotherhood in Illinois were enabled to purchase direct from the manufacturer for $90 mowing machines retailing at $125. The direct market thus opened up enables the manufacturer to deduct that portion of the price of his wares which it has hitherto cost to market them.

Information concerning the Order of Patrons of Husbandry and the necessary blanks, instructions and authority for the preliminary organization of Granges in South Carolina and Florida can be procured by addressing D. H. JACQUES, General Deputy, Charleston, S. C.

We have a complete corrected list of the Granges in South Carolina, between seventy and eighty in number, which we propose to print in our next number. All new Granges,

organized in the mean time, should be correctly reported at this office.

Secretaries of Subordinate Granges in any of the Southern States will confer a favor by reporting at this office their name, number, post office, County and State, with the names of the Master and Secretary, as we desire to publish a complete list.

The Patrons of Husbandry in Iowa, it is said, lately had a procession seven miles in length. There are over five hundred Granges in that State.

There are more than one thousand Granges of Patrons of Husbandry in the United States, numbering in the agregate, over 200,000 members.

Gen. A. J. Vaughan, Early Grove, Marshall County, is Master of the State Grange, Patrons of Husbandry, of Mississippi, and W. L. Williams, Rienzi, Alcorn County, Secretary.

E. G. Wall, Esq., Jackson, Miss., has been appointed General Deputy of the National Grange, Patrons of Husbandry, for Mississippi, Alabama and Louisiana.

Col. D. Wyatt Aiken, Deputy at Large for the Southern States, should be addressed at Cokesbury, S. C.

Col. D. Wyatt Aiken is to deliver the address at the opening of the Fair of the Carolinas at Charlotte, N. C., on the 22d instant.

Miscellaneous Notices and Brevities.

WHY WE ARE LATE THIS MONTH.

On the morning of September 5th, a fire broke out in the Press Room of our extensive Printing Establishment, threatening for a time the complete destruction of the building. The flames were, however, subdued, but not till property to the amount of many thousands of dollars had been destroyed. Being obliged to procure new presses and other machinery from New York, some delay has necessarily occurred in printing The Rural Carolinian. Our readers will, we are sure, receive this as a sufficient apology for a delay which we trust will not soon occur again.

Walker, Evans & Cogswell.

ST. LOUIS AG. AND MEC. ASSOCIATION

The above joint stock Company will hold its Twelfth Annual Fair in St. Louis, Mo., beginning on the 3d and closing on the 12th of the present month. This Company was organized in 1856, and has annually held its magnificient Fairs, which were conceived for the purpose of improving the Agriculture of the country in all its varied branches. Whether it has performed its object is best known by learning something of the Association at present.

This premium list offers $40,000 worth of awards, of which $10,000, presented by the merchants of St. Louis, for cotton alone. In the list is a $500 premium for the best bale long or short staple cotton, raised in South Carolina; for the second best $250; for the third best $100. Also a premium of $1000 is offered for the best bale of long or short staple cotton grown anywhere during the year 1872, and weighing 400 lbs.

Will any of our citizens compete? If they do, we shall be pleased to herald to the world their success, especially should they have had close competition and succeed in getting the $1000 premium.

This Company has always reinvested its net earnings in improvements, until it is enabled to boast the most highly improved grounds, the most extensive halls, and the largest and finest amphitheatre in the world. Last year there were over 8000 entries for exhibition. This year 10,000 are anticipated.

COTTON PROSPECTS.

The September Report of the Department of Agriculture indicates a decline in the cotton crop prospect during the past month, in consequence of the presence of the cotton caterpillar in portions of Georgia, Florida, Alabama, Mississippi and Louisiana, and o

drought of moderate severity in Texas, Arkansas and Tennessee. The condition of the crop as shown by the average of returns received, is as follows: Virginia, 97; North Carolina, 101; South Carolina, 95; Georgia, 96; Florida, 92; Alabama, 88; Mississppi, 90; Louisiana, 86; Texas, 94; Arkansas, 78; Tennessee, 92. Thus the prospect throughout the entire cotton States, which favored a yield of five per cent. larger than the average produce, promises at the present time about ten per cent. less than an average. The increase of acreage over last year and the unfavorable character of the season of 1871, still point to a material increase in the total crop of 1872, while the possible extension of insect ravages or the early occurrence of frost may modify the present expectation.

HOW DOES IT LOOK?

We hope our readers will appreciate the improved typographical appearance of THE RURAL CAROLINIAN, now printed on bright new type throughout. We confess to being rather proud of its good looks and we trust the improvements we have tried to make in matter and arrangement will be equally apparent. Only give us the means, by increasing our circulation, and we will make the Magazine still better, in many ways. There is always "room higher up," and higher up we purpose to go; but our readers must go with us and help us.

To many inquiries as to where, in the South, Merino Sheep, Alderney cattle, Devon cattle and Angora goats can be had, we are obliged regretfully to answer: "We do not know." We doubt if there be any considerable number of either of these kinds of stock in the South that could be bought at any price. This should not be so. Let us have a Stock Company, at once, for the importation and sale of such animals in the South, at reasonable prices.

For our November number we want brief answers to the following questions, to reach us on or before October 15th:

1. How does the cotton crop of this season compare with that of 1871, so far as your observation extends?

2. The same question in regard to corn and other farm crops.

3. How does the area sown, or prepared to be sown, in the small grains and grasses compare with that of last year?

We welcome again to our table the *Farmer and Gardener*, suspended for a short time on account of the death of its respected and beloved publisher, Mr. E. H. Gray. It is now published by Mr. James L. Gow and edited, horticulturally at least, as heretofore, by our friend and correspondent, P. J. Berchmans, the right man in the right place. (Augusta Ga., $1 a year.)

A late pleasant visit to quiet, home-like old Georgetown, was rendered doubly agreeable by the genial hospitality for which its people are noted. We had also the pleasure of completing there the organization of Winyah Grange, No. 25, Patrons of Husbandry, by installing its worthy officers. Acknowledgments are also due to the Agents, Captain and Purser, of the Steamer Emilie for courtesies rendered.

The coffee crop of 1872–'3, which at one time promised to be large, suffered subsequently from excessive heat; it has since been injured by heavy rains, and, although it is too early to form an approximate estimate of the out-turn, it seems certain that it will not exceed an average.

The Florida Land Register, Jacksonville, Fla., says: "It will be observed that we make frequent extracts from THE RURAL CAROLINIAN and we feel that in thus doing we show our appreciation of it. It is filled always with matter which we wish our patrons could read. It is the best Southern agricultural journal in the Atlantic States.

Estimates of the last cotton crop (for the year ending September 1st, 1872,) vary from 2,800,000 to 2,974,351, the last being that of *The Commercial and Financial Chronicle* of New York. According to the same authority the crop of 1870–'1 was 4,352,317.

We have received complimentary tickets to a large number of fairs in various parts of the country for which we must tender here in-

dividually and collectively our thanks. We regret that we can not make use of them all.

The Forty-first Annual Exhibition of the American Institute opened at Exhibition Hall, on Third Avenue, between Sixty-third and Sixty-fourth streets, in the City of New York, on Wednesday September 4th, and will close on Wednesday, November 13th, 1872.

A very acceptable article on "Ramie and Jute in Louisiana," came to hand too late for the present number. Several other contributions deferred for want of room.

NEW RURAL EXCHANGES.

If any of our readers desire to take an agricultural or horticultural paper, or magazine, from another and distant part of the country, they will find those of the Pacific Coast much better adapted to their use than the Eastern publications, the climate, and the productions of that region, and especially of Southern California, being more like our own. *The Pacific Rural Press*, weekly, Dewey & Co., San Francisco, $4 a year; *The California Agriculturist*, monthly, Holloway & Herring, San Jose, $1 a year; and *The California Horticulturist*, monthly, F. A. Miller & Co., San Francisco, $3 a year, are all sterling and ably edited periodicals, and among the best of our exchanges.

——*The Bee-Keepers Magazine* is an illustrated monthly publication, just commenced in a style and under auspices which seem to ensure success. Its editors are such well known writers on bee-keeping and kindred subjects, as Homer A. King, Prof. A. Wood, Ellen S. Tupper, and M. E. Williams. No. 1, now before us, does credit to the taste, industry and talent of its conductors. H. A. King & Co., publishers, 14 Murray street, New York; $2 a year.

——*The Flower Garden* is the name of a handsome and well filled "Quarterly Magazine of Floral Progress," issued by C. L. Allen & Co., 76 Fulton street, Brooklyn, N. Y. It is of course intended as an advertising medium for their extensive business as florists, but it is well worth the one dollar a year they ask for it, to say nothing of the dollar's worth of seeds or bulbs to which each subscriber is entitled.

——*The North American Bee Journal.*—The first number of this new magazine of bee-keeping, announced in these columns some time ago, has come to hand, and though a small work, is full of excellent matter, much of which relates to Southern experience with bees. Moon & King, publishers, Indianapolis, Ind.; $2 a year.

PAMPHLETS AND CATALOGUES.

Our friend and occasional correspondent, Mr. Henry A. Dreer, of Philadelphia, has been to Europe, to make his collection of bulbs in person, and he offers in his new illustrated Fall Catalogue a collection even more attractive than usual. In hyacinths he is particularly strong, and his bulbs, as we know by experience, can be depended upon, if planted according to directions. If any of our readers of the sterner sex get hold of Mr. Dreer's Catalogue, they had better not let it fall into the hands of the ladies of their families, unless they have a greenback V or X that they can spare for floral adornment, for the ladies will never be able to resist the temptation of his five and ten dollar "assortments," and we don't advise them to try to resist it. Flowers *pay*. Catalogues free.

——Mr. C. W. Briggs, of the firm of Briggs & Brother, Rochester, N. Y., writes from Haarlem, Holland, August 3d, that that city and its neighborhood "is the headquarters of the fall-flowering bulb trade of the globe." He has selected there the most desirable varieties and the best quality of bulbs, and adds: "I am dealing with parties in whom I have entire confidence. I have no doubt at all that Briggs & Brother will have a better and more complete assortment of bulbs than has ever before been offered for sale in America." For a most attractive list of these, see their beautiful new Fall Catalogue, which is sent free.

——A "Descriptive Catalogue of Plants in the Exotic Collection of the Department of Agriculture," by Wm. Saunders, Superintendent of Gardens and Grounds, is an admirable little manual, which will be found useful as a guide to those who may desire to inspect or study the plants in the Conservatories of the Department. It is not intended for distribution.

——"Peter Henderson & Co.'s Bulb Catalogue," for the Fall of 1872, can be had by addressing this well known and trustworthy firm at 36 Courtland street, New York. In addition to their large and choice collection of bulbs and flower roots, they offer flower seeds for Fall sowing, strawberry, raspberry, grapes, and other plants, in great variety.

——"Address read before the National Agricultural Congress at St. Louis, May 27th, 1872." By Wm. M. Lawton, of South Carolina. An earnest outspoken production, abounding in telling facts and figures relating to the present condition and wants of the South, and making a strong plea for immigration.

——Dr. F. Peyre Porcher's Address before the South Carolina Medical Association, at the meeting held at Columbia, April, 1872," gives a most interesting and highly suggestive account of the Yellow Fever in Charleston in 1871, and should be widely circulated and carefully preserved.

——Prof. Eug. W. Hilgard has favored us with a "Catalogue of the Officers and Students of the University of Mississippi, for the session of 1871–'72."

MERE MENTION.

Charles Yardley, Pittsburg, Pa., wishes to tell our readers how he cured his cancer with "wild tea." Perhaps he thinks they are green enough to be caught in that old "humbug" trap. We don't think they are.

——We are pleased to learn that the Agricultural and Mechanical Department of the University of Mississippi has made a promising beginning under the general management of Chancellor Waddell, and Professor Eug. W. Hilgard.

——A correspondent of *The Cincinnati Gazette* finds that it pays to break up wheat land at least twice before sowing. He gained ten bushels per acre by the extra ploughing.

——Mr. M. L. Sullivant, of Ford Co., Ill., has a snug little cornfield of 10,000 acres. This whole crop covers an area of 20,000 acres, being nearly one half of his small farm.

——*The Farmer and Artizan*, lately published at Athens, Ga., has been discontinued, the subscription list being transferred to *The Plantation*, Atlanta, Ga.

——The forty-fourth Course of Lectures in the Medical College of the State of South Carolina will commence on the 15th of October, 1872, and close on the 15th of March, 1873.

——The largest vineyard in the Southern States is said to be one near Fayetteville, N. C., containing 100 acres on which there are 7,000 vines, chiefly the Scuppernong.

——A Vermont farmer was startled while hoeing corn recently by seeing a rhinoceros coming towards him, ploughing a furrow like a steam plough with his horn, a performance not in the showmans programme.

——A reporter has been interviewing Johann Strauss, who said he was delighted with every thing in America but the lager-beer, which he regarded as villanous, and he longed ardently to be restored to his "divine Vienna beer."

——The Austrian Government cautions young girls with musical talents not to go to the United States, saying that those who have gone there have either been defrauded of their wages or been led astray.

——An Iowa agriculturist has 40 acres of land near Keokuk entirely devoted to such crops as produce the most forage for bees. He raises clover, buckwheat, and garden flowers.

——France has 4,500,000 acres of vineyard, which produce 900,000,000 gallons of wine annually, or an average of 200 gallons per acre.

——According to *The Tom's River Courier*, and reports from all sections, the cranberry crop is not expected hardly to reach half an average one.

——A Key West, Fla., date-palm tree has on it ten bunches. One of them has been found to weigh fifty pounds.

——A New York dairyman is to exhibit at the Tennessee fair this fall a cheese that weighs over a ton.

——The tomato plant in Southern California is perennial, lasting four or five years.

——The olive crop in Santa Barbara Co., Cal., the present year, is likely to prove an entire failure.

——A Chinaman, in San Francisco, who has given himself up as the murder of Sun Loy, happens to be named Ah Hung.

Literature, Science and Home Interests.

THE CAVE OF THE WINDS.

PART I.

On the morning of the day before the marriage, William Branwell received the following letter, which was read to him by his secretary:

"*Mr. William Branwell, Branwell House, near Dorchester, B. P.:*

Sir: I received your note of last week desiring to know if I am ready to fulfil the promise made to your late uncle and my guardian. It was a promise which I have always considered sacred, and have expected its fulfilment; therefore I reply to your letter in the affirmative.

Here let me take occasion to say that when the contract of marriage is performed between us the object for which my guardian required that promise from us will have been effected, and that from the moment the ceremony is completed we shall henceforward be as entire strangers to each other as we have always been. I believe you to be a gentleman, and you well know the love and gratitude I felt for my guardian was the sole motive that prompted me to accede to his dying request; therefore I know you will respect my wishes, and I presume they but coincide with your own.

As you stated in your note, I shall expect you on the evening of the 15th.

Very respectfully,

Fermor Lorillard."

William Branwell, leaning back in his lounging-chair in the library, listened intently to the reading of this epistle, and when it was finished he breathed a deep sigh of relief, and exclaimed:

"Thank Heaven! The girl has common sense!"

"Uncommon sense, I should say," observed the secretary, still holding the letter in his hand and looking at the clear characters apparently traced so rapidly. The secretary looked from the letter to his employer, whose head was thrown back against his chair, revealing the unhandsome face in the full light of the room—a light, alas! which Branwell could not see. He was entirely blind at that time, but with strong hopes that the affliction would prove but temporary. That green shade hid all the beauty of the man's face—his large, clear, passionate gray eyes, in whose varying shades was revealed the opulence of his nature.

"What sort of writing is it? Let me take the paper," said Branwell, stretching forth his hand and holding the sheet for a moment.

"I confess I like the chirography," was the reply; "it is graceful, but somehow I have the feeling that the girl is possessed of a devilish pride."

"You get that idea from the way the letter is worded," said Branwell, laying it down with a sigh that he could not see it.

"It would be a joke if you should fall in love with her—rather of a hopeless case for you," said the secretary with a laugh.

"An improbable case, also," was the response, "as I shall hardly be with her half an hour, and cannot see her; if she was Calypso herself, she could have but little effect upon me."

"You will, I suppose, settle part of the Branwell, fortune upon her," said the secretary interrogatively.

"I shall immediately make over half the property to her. Curious that my uncle would not name her his heiress, instead of making this arrangement for keeping the fortune in the family and giving it to her also. It is a very disagreeable affair, Morton."

"In truth, you do not seem to me to be a very exulting bridegroom," was the secretary's reply, with his semi-cynical smile.

As his companion spoke, Branwell leaning forward, felt for the letter on the table, and again took it up.

He felt a painful interest in this affair; it was every way so repulsive to him, and yet he could not withdraw honorably. His promise had been unequivocally given to his uncle a few weeks before he died, that the hand and fortune of the last of their family should be given to the adopted child of the childless old man. Then the nephew had departed upon his foreign tour, never having seen Fermor Lorillard, who was sent for from school a week later to attend the dying man, whom she loved with the enthusiasm which his tenderness had called into being.

"Well, Morton," Branwell said at last, "go and get me a new white vest and some gloves, and we'll take the afternoon train and away to the wedding. And, Morton," as the secretary rose, "secure our state-rooms in the Asia, and learn when she starts."

As the door closed behind the retreating man, a breath of wind, entering, fluttered the paper from the fingers of Branwell and wafted it into the grate, where it curled up in the flames, and Barnwell, as he detected the smell of the burning paper, thought:

"As it is the first, so it is the last letter that woman will ever write me. A wife whom I shall never love and never see! My uncle you have prepared a strange future for us."

It was in a small house on the coast of Massachusetts—one of those thrifty little habitations which seem the index of prevailing New England life—that Fermor Lorillard

awaited her affianced husband. During the interim between Mr. Branwell's death, and the approaching marriage, some six months or more, Fermor had taught school in this Massachusetts village, which was her birthplace. Mr. Branwell had made no will, and she could claim no property. It was by this marriage that her guardian was to adjust everything, but previous to it she could not bring herself to consent to receive the proffered bounty of the nephew.

She sat in the prim sitting-room in the gray of the fall day. A penetrating, whistling, northeast rain-storm beat against the windows; from the bay came the sound of the regular, deep concussions of the lashed ocean against the rocks. Mrs. Trask, the widow with whom she boarded, was the only other person in the house; she began to fidget anxiously, to listen for wheels, to go to the window and pear out with hand-shaded face, then to glance at the girl who sat with arm curved along the table and head drooping slightly, her eyelids fallen so that the eyes seemed to rest on the strip of intenser light that lay along the floor from an opening in the stove.

"I am afraid the storm has detained them," at last she said, looking questioningly at the girl.

"In that case he will come to-morrow," she replied; then lifting her head quickly she said: "A carriage has stopped. I think he has arrived."

A shade of crimson flowed and ebbed in her face, leaving it transparently pale, with a strange sheen of light over it.

An imperative rap on the door, which Mrs. Trask tremulously answered.

"Miss Lorillard here?" questioned a rapid voice, as the speaker stepped into the little three-feet square entry to escape the rain. Fermor had risen and looked at the speaker with keen eyes.

Was this the man, this tall, elegant figure, with bland, good-natured, but sensuous face? She was not merely indifferent to this man, she felt a contempt for him.

"Yes, she is here," said the widow deferentially.

The man had with rapid glance seen the figure in the background.

He uttered an abrupt "Pardon me!" and then ran down the yard.

"That, then, is not Mr. Branwell," breathed Fermor to herself. "But why should I care?"

By this time Morton returned with Branwell's hand upon his arm. He led him to Fermor and said:

"This is Mr. Branwell, and you, I am sure, are Miss Lorillard;" and Branwell bowed in silence, and felt for an instant the slightest touch from the girl's outstretched hand.

Then he turned from her and removed his wet outer coat, and leaned his arm upon the mantle by the fire, waiting helplessly for Morton to fulfil the instructions he had received.

Fermor sat down opposite Branwell, but not looking at him. She had heard that he was blind, and she did not know but it was expected to be a permanent misfortune. One glance at his face as he stood there, reticent, proud, had made her unable to address a sentence to him, even had she wished to do so.

"Will you direct me to the nearest clergyman?" asked Morton, speaking to Mrs. Trask.

She told him, and he went away, leaving Mrs. Trask in a flutter that she was entirely alone in this great responsibility; and feeling a sudden, irresistible desire which she had not foreseen, she slipped out the back door with a shawl drawn tightly over her head, and ran across the road to ask Mrs. Coal to come in as another witness, she having a vague idea that a marriage was hardly a marriage unless there were a dozen or more present.

Mrs. Coal had company—a lady who listened languidly to Mrs. Trask's hurried proposition, and when she ceased speaking said, but with little show of interest:

"I believe I'll go over; it seems rather an odd time. You have no objections, I suppose?"

A voluble negative was the answer, and she drew a waterproof round her and went across the wet road and into the little sitting-room where were the man and woman in the same positions.

Fermor did not glance up at their entrance, supposing it was only the widow. The stranger drew back as if afraid of intruding, and pulled her hood far over her face.

Branwell raised his head slightly as he heard two enter, and listened if Fermor should greet them, curious to hear her voice; but she said nothing.

A few moments after Morton returned with the minister, who at first inclined to be slightly hilarious, as ministers are apt to be on such occasions, but he soon subsided into the quietness prevalent.

Then the two stood up, and the meagre Presbyterian service was said over them, and the minister prayer for their happiness. With a feeling of relief, Fermor saw that Branwell produced no ring as a symbol of their union; he left her hand free, as her life and heart should be.

When the ceremony was over, as Fermor turned to receive the greeting Mrs. Trask thought it necessary to give, she noticed for the first time the presence of the stranger, but it was only to see her figure gliding from the room.

The minister had left. Branwell stood for a moment silent, then he said:

"Miss Lorillard," unconscious he was using a name no longer hers, "I return now to my home. I fulfil, as becomes a gentleman, every wish you have intimated to me." He took a letter from his pocket, and held it to her say-

ing, "In this you will find instructions concerning your property, and I advise you, if necessary, to consult the family lawyer of the Branwells. In case of my death, you will find in his possession a will that bequeaths to you the whole estate. We have now obeyed my uncle, your beloved guardian, and now good-by."

Again that slightest finger touch. Standing near him, Fermor said in a low voice: "You have been as considerate as I could have wished, and I thank you. Good-by."

Morton, standing near them and looking at the girl, felt an undefinable sense of anger and admiration; wherefore, he could not tell. He said to himself:

"What a deuce of a time if either of these fine people fall in love with somebody, some day!"

Branwell turned to him and took his arm; they entered their carriage, and an hour after were speeding homeward in the cars.

Then followed the swift journey across the water, the years of wandering in foreign lands, a life which left its vague impress upon soul and body—a life whose characters we shall read in that dim interpretation with which it is vouchsafed that one mortal may translate another.

An ocean steamer was moving over the calm sea with that steady, but almost imperceptible motion which so annihilates space; A serene moon swung in the deep sapphire, and made elfin the world of water and beauty.

In five years of absence, William Branwell has recovered sight and strength, and acquired something of the sad cynicism of the man of the world. He leans over the rail, not too hackneyed to feel the intensity of this night, wherein spring seems to pulsate in the azure and virescent sparkle of waters, to breathe in the blue above, for the bosom of March holds within it the love of June.

A flutter of garments near him, a faint evanishing perfume, and a lady had walked by and disappeared down the staircase. As he turned casually to look after her, the moving of something white a few feet from him made him step forward and pick up a handkerchief which the lady had dropped. What intangible essence floated to his senses, stirring that sleeping memory of a marriage on a stormy night years ago, when he had not seen the bride—a bride who seemed to him, as he thought, the mere fantasy of a vision, never a reality?

He slowly turned the handkerchief to the name in the corner, and the word set his thoughts seething in irrepressible interest and curiosity.

For the name was Lorillard.

The boat was half-way across the Atlantic, and Branwell had not noticed particularly any ladies on board. None had claimed more than the fleeting glance that one stranger gives another. The thrill of surprise died out in his heart, as his reason told him how easy it might be for a Lorillard to be on board, but not the person in whom he could feel an interest; and if by chance it were that woman, then still less would he care to see her, for that tie, unwillingly assumed, and however lightly worn, was still galling when he thought of it; but his thoughts rarely took that direction.

The handkerchief swayed in his fingers strangely; it seemed to possess a subtle power over him—the power of recalling too vividly an event in that nightmare time when darkness encompassed him.

He put the handerchief in his pocket, and moved slowly down into the saloon. The gilded splendor of the place alone in the light of the lamps. A few ladies lounged in the apartment, but the greater number were on deck or in their state-rooms. They were reading, or chatting softly with each other, and with the two or three gentlemen who had that despicable air of being on gallant duty.

Remote from these, at the piano, sat a lady whose gray dress and falling shawl seemed those of the one who had just passed Branwell.

He advanced towards her, but paused at a little distance, looking in surprise at this woman, who seemed to combine a marvellous beauty with a faultless grace.

She was very pale; she had probably kept her state-room until now, for Branwell had not seen her before. She sat leaning her elbow on the piano as she turned over some music there—turned it listlessly as if utterly ennuied. She was blonde, not one of the washed out blondes one sees so often, but richly, gloriously blonde, such as in the days of beauty the skies of Venice might have smiled upon. A face and figure for which any man might be pardoned the wildest extravagance.

As Branwell hesitated, startled into a quick admiration, the lady's fingers caressed the keys into a murmer of melody—a gurgle of harmony. Sweeping the written sheets aside, she gave to the instrument the voice, the smile of Undine ere she had known the grief and bliss of a soul—the tone of a Rhine Lorelay, with no malice in its blandishments.

Apparently she had not seen the gentleman, who unconsciously advanced a step nearer, so that he stood by her chair. The music had been so low that it had not attracted the attention of the company, and Branwell stood alone with this stranger, who appealed in a double sense to him—by the power of memory, and by the wonderful influence of her presence.

Her hand left the keys, and after a moment she half turned in her seat, and saw with a look of surprise the man standing near her.

Ever self-possessed, Branwell spoke with the ease that so clearly betokens a man conversant with society.

"I rely on your kindness to pardon me, madame; I have only the poor apology for my intrusion, that I came to restore this. I am not mistaken in its owner, am I?"

He offered the delicate bit of lace and cambric as he spoke. She extended a hand, fair and ringless, and took the handkerchief, saying:

"I think your pardon is earned. Thank you, it is mine."

The voice was cultivated and smooth. Had he ever heard it before? It was not so entirely unlike other feminine voices of culture that he could tell certainly. He still lingered.

"And you are Miss Lorillard?" he said, watching her face.

It seemed impossible for her to prevent some indescribable expression from darting lightning-like across her face. Branwell saw it with a tingling of pride that was somehow allied to fear.

"I am Miss Lorillard," she said quietly.

Evidently this man desired the acquaintance of this woman, and very evidently, also, it was not a rare thing in her experience.

"I pray you to grant me your indulgence again," he said, "and allow me to avail myself of the freedom of life on shipboard, to beg that I may consider myself presented to you without the aid of a common friend."

The sentence would have sounded formal in any other tone than the unusual one of mingled carelessness and flattering interest—carelessness of ceremony with the earnestness of personal regard.

She took the card he extended to her, looked at it, then glanced up at the gray eyes looking down on her.

"Mr. Branwell," she said, "you apologize in such a charming way that I not only pardon you, but acknowledge you as an acquaintance."

"I will confess," said Branwell, coming closer and resting his hand upon the piano, "that the name upon your handkerchief appealed to my curiosity, for in years past I have known those who bore the name of Lorillard. Am I speaking to an American?"

Had the lady wished to discover anything from that face, she could have detected nothing beyond a complimentary interest—revealed unconsciously just enough to be very flattering, because there was nothing of forced *empressement* in it.

"I am an American," she said. "But the family of Lorillards to which I belong is obscure and impoverished. It is hardly possible that you could know them."

Her manner revealed that she did not care to converse upon that subject, and Branwell skilfully changed the conversation, all the time feeling unable to restrain himself from a curious watching of every look and gesture.

He was not superstitious, but in that first half hour with that beautiful woman he felt a strange depression, some lurid glimmer of an undefined evil. In all the beauty of the hour, the sheen of lights, the softness of music, the murmur of the woman's talk, he inwardly felt a vague foreboding, and smiled in self-derision at the feeling.

It was she who now led the conversation, gliding from one subject to another with the graceful *persiflage* which when well done is so attractive.

Branwell had lived too long in the world of society to be easily fascinated, but he felt that she exercised a charm as strong as it was strange. But in all this harmony there was one note which jangled harshly—a tone, an indescribable accent of her voice, that came now and then as she talked, which suggested to Branwell some untruth in her nature—something entirely at variance with her faultless loveliness.

He was not aware how long he had remained in the saloon, until glancing round he saw that there were but one or two persons present, and they half dozing away the hours of this incomparable night.

"I am intruding to an unconscionable length," he said at last; "I believe those people have regained their appreciation of this moon. Do you still retain sufficient sentiment to enjoy a moonlight promenade, as everybody else is doing?" he asked, taking his hat and withdrawing a step.

She rose and stood by the piano. Certainly there was a strange charm about her. Her most trivial movement seemed invested with some subtle attraction.

"I acknowledge the possession of sufficient sentiment," was her response, "but am not well enough to yield to any such temptation tonight."

Branwell was irritated that after all he should have lingered to receive his *congé* instead of going of his own desire. He gave one glance at the pallid face on which fatigue was plainly written, then bowed coldly and went upon deck.

It is true that a day on shipboard is like a tropic sun to acquaintanceship; we bloom into friendship in such a climate, when the cooler air of conventional land life would never warm us into a half existence. If there grew no friendship between Branwell and Miss Lorillard, there was a sort of familiarity not without strong attraction to Branwell, despite his often strengthened decision that he did not care for women who carried art and self-possession to such a degree.

Slowly a tinge of health returned to Miss Lorillard's face; an elasticity no less graceful took the place of the languor which had characterized her movements when Branwell had first seen her.

Accustomed to feel nothing but indifference toward all women, Branwell rather smiled at his folly in this passing fancy for one who had been a stranger to him a few days before.

It was the last night on board. A waning moon lifted its yellow disk above the eastern waters; its horizontal rays of gold fell upon Branwell and Miss Lorillard as they stood among a group of passengers on deck. That light, so full of all the ideality of romance, and above all when it pours over the sea, was not without its power upon that company, however practical they might be in the flaming daylight.

Perhaps the two, standing a little apart from the low-talking people, felt the approaching parting as a shadow of unpleasantness. They caught detached sentences from the talkers, of appointments to meet again, of addresses and invitations given.

Somewhat abruptly turning from them with his companion's hand on his arm, Branwell said in the tone of one who speaks of an absent friend casually:

"You have never betrayed any curiosity as to my interest in your name. Is it because you have felt none?"

The girl knew that his eyes were upon her; with a scarce perceptible tremor of eyelids she raised her glance and said:

"I only felt you had known, perhaps been intimate with some of that name."

Before she had finished speaking, her gaze wandered off to the molten line of moonlight that shimmered before them.

"On the contrary," said Branwell, "I have hardly met a Lorillard in my life, but there's a curious episode in the life of a friend of mine connected with the name which I remember. Shall I tell you of it?

"Yes, if you will."

The man did not lose a look of that face as he had spoken. She seemed some way moved, yet her face and manner baffled him entirely.

Urged on by the overpowering desire to set at rest, if possible, the wild conjecture which had risen in his mind, Branwell went on.

"This man, owing to a combination of circumstances, was obliged to marry a lady, a Miss Lorillard, whom he had never seen, and curiously enough at the time of his marriage he was blind and could have no glimpse of the face of his bride. That mattered but little however to him, for he left her directly, and there ends the story, Miss Lorillard."

Branwell, despite her effort at control, could but be aware of some strong agitation holding sway over her. Some indescribable change came over her manner—a strange mixture of repellent reserve and rare, alluring kindness.

"And where is this man of strange experience now?" she asked.

"Oh, he became a famous traveller, I believe. It would be hazardous to guess at his location."

"And is he still blind?" she said softly.

"There were strong hopes of his recovery," said Branwell, as though all interest had left the tale, save that concerning the heroine of it.

"And when did that happen?" she inquired.

"It must be four or five years since."

"And the deserted wife?" said the girl, in a scarcely audible undertone.

"Deserted! Miss Lorillard, I did not give you to understand she was deserted, did I?" said Branwell, devouring the half-hidden phases of curiosity, sympathy, or whatever it was, upon that fair face.

"You said she was left; what else could I understand?" was the response.

"When a lady is left by her own command, it can hardly be said she is deserted," said Branwell.

Miss Lorillard's face flushed all over with a sudden feeling, as she said, with an eagerness ill subdued:

"Then the bridegroom left disconsolate? It was he who wore the willow of desertion? Does he still pine for the love he cannot have?"

"You put it very strongly," Branwell said; "did I not tell you it was a business transaction entirely?"

"And not an affair of the heart for either party?"

"For neither party."

Miss Lorillard laughed as she drew her shawl closer about her.

"By reducing your story to a mere business arrangement, do you know you have taken all the romance from it?" she said.

"And therefore all the charm?"

"Not absolutely. The story presents such delightful possibilities as to have a power."

"To what do you refer?" he asked.

"Why, of course," was the reply, "to the possibility of his eventually falling in love with his wife."

He turned and looked at her, and said with unconscious decision:

"But that is impossible. Husband and wife have never met, and never will. He has never seen her."

Miss Lorillard's face was suffused with some look that seemed to come from the depths of her nature, to struggle for recognition.

Averting her face as he spoke, and withdrawing her hand from his arm, she would have walked on without support; but a sudden, quick movement of the ship made her reel, and he caught her hand quickly, saying:

"Miss Lorillard, you forget that you are yet on shipboard."

Perhaps both knew that the emotion which with all her art she had not been able to subdue, was in some way related to the story to which she had just listened, but neither spoke of it. The next remark Miss Lorillard made was upon some other subject; and when they again passed near the stairway to the saloon, she said:

"Some haunting memory of my illness occasionally troubles me, and to-night is one of the times. So good night, Mr. Branwell."

She stood distant and calm as she spoke, and that apparent withdrawal was more attractive to the man than any kindness would have been at that moment.

"And I shall not say good morning until the blessed vision of land is with us," he said, and watched her as she went down the stairs, then turned to walk the deck alone, the thought of her remaining with him with the tantalizing force of wondering incredulity. Had fate or Providence brought his wife on board this boat in which he was returning, for the first time since his marriage? The idea, absurd as it seemed to him in the light of common sense, recurred again and again, and brought with it the strongest feeling of recoiling from his future, of wonderment concerning this woman, whom casually he should say that any man might be proud to call his wife. Vainly, with some dark whispering of evil, he strove to read in that future some hint of the life which awaited him.

Morton, the only man he knew who was present at the marriage, was wandering in the far East—where, he had not known for several years; for when he had recovered his sight he had had no further use for the volatile but kind-hearted secretary. Mrs. Trask was dead, though he did not at that time know it. Everything concerning that marriage had been so secret, so hurried, even Branwell's most intimate friends did not know of it; and though he had taken no measures to conceal that episode in his life, yet he never spoke of it and but rarely thought of it.

He was returning to the country-seat which had been one of his uncle's possessions, though he had never of late years lived there; but the nephew had taken a fancy to the grand gloom of the oddly-constructed stone house, imagining that wealth and youth could make of it all that he could wish. Of his wife's relatives he knew nothing; he fancied he remembered his uncle's saying that she had none save those far removed, and his pride revolted against instituting inquiries among strangers as to the identity of his wife. It was, however, humiliating to the man to be thus held by circumstances which he felt he but half comprehended. But as in all these days past life had flowed, if not placidly for him, at least endurably, so in that enchanting moonlight of his return voyage he challenged Fate to the weaving of all her chains; there could be none which a heart like his, unloving and unloved, might not break or wear indifferently.

In the early gray of the day there was the rush and clatter of the approach to the harbor; passengers came on deck with wide, bright eyes fixed longingly on the dim town, whose lights gleamed through the mist of early half-light.

The boat touched at the wharf; amid the rude jostling Branwell stood quiet, his eyes fixed on the direction from which Miss Lorillard must come; but the crowd decreased so rapidly, and she did not come, that he thought of going down after her, when she appeared, heavily wrapped, and walked forward without glancing round her, in such a way that Branwell could not advance to speak to her. He saw the profile of her beautiful face; cold and calm it looked in that gray light. "At least," thought Branwell with smile of some bitterness, "it would not have been ill in her to have given me the adieux of a stranger. She need not have feared I would presume upon her favor."

Just as the driver was closing the door upon her in the carriage, she saw Branwell in the crowd. As she met his glance she leaned forward, making a salute of farewell with one hand. He returned it with distant deference; then she sank back upon her seat, and with the smile of some hidden thought upon her face rode on.

Branwell walked into the city, annoyed, dissatisfied. He had failed to learn aught of Miss Lorillard, even the place to which she was going. Absolutely all he knew of her was that she had been travelling in France previous to her return to America; that her home was in Massachusetts, but that she did not intend to return there directly. In thinking of his acquaintance with her, he remembered that he had casually mentioned his intended home, but otherwise had said nothing of his personal affairs. As he sauntered aimlessly along the streets, half scorning himself for the folly of remembering a woman whom he could not affirm he either liked or disliked, the carriage that held her dashed past him, and he saw again the face, and in the broadening light of day he fancied there was a glare of triumphant light in those golden eyes, some strange look of imperial triumph.

He turned suddenly up the steps to a hotel, saying to himself: "It shall be as if I had not seen her."

LABOR AND SACRIFICE.

The following poem is so happy in its imagery, so sweetly musical in its rhythmic movement, and so chaste and elevated in its sentiment, that, although it has already been widely copied, and may not be new to all our readers, we can not refrain from enriching our pages with it. It was suggested by the seal of the Right Reverend Stephen Elliott, D. D., the crest of which was a bullock, and the motto "For Labor—For Sacrifice." We find no name attached to it as author, and do not know where it originally appeared; but if our occasional correspondent, Dr. F. O. Ticknor, of Columbus, Georgia, did not write it, then

we have another, and an unknown poet, who rivals him in his peculiar lyric talent, which we are not ready to believe:

I.

The cream was of the kindliest strain
That ever meadow drew
From sunlight and the summer rain,
From starlight and the dew!
That left no stain in yonder vein
Save Heaven's—the sapphire blue;
That gentleman we knew,
The gentle and the true,
The Knight, whose signet bore
The bullock—and no more!
The quaint device of "Sacrifice,"
And "Labor"—and, no more!

II.

And matchless sweet the golden wheat
That must have moulded him,
A man complete from head to feet,
God-like, in soul and limb,
That gave his gaze the Lion's blaze.
His smile—who smiles like him?
Ah, tremulous and dim,
Thro' tears we think of him;
The Knight, whose signet bore
The Bullock—and no more!
The quaint device, by "Sacrifice,"
And "Labor," won of yore!

III.

Upon no statelier sight
The circling sun hath smiled:
Nor oak of loftier height
Dropped shade so sweet and mild,
When love came down like light
And happiness grew wild;
The Sage, the little child,
Peasant and Prince have smiled
Around his knee who bore
The Bullock—and no more—
The quaint device of "Sacrifice"
His fathers won of yore—
Which he shall wear no more!

IV.

For he is dead! Beneath the tread
Of battle—in the roar
That rent the sod, his face to God,
He went and came no more!
The fragrance of the path he trod
In "Sacrifice," is o'er,
Yet all the kindliest rays,
Of all the knightliest days,
Kindle forevermore,
Around the Cross he bore,
Around the quaint device
Of "Toil" and "Sacrifice,"
That our great Bishop wore!

A PIECE ABOUT THE MOON.

The "Fat Contributor" has the following inimitably droll astronomical disquition:

The planet borrows her light from the sun, but is never known to pay it back again. Like all people who live on borrowed capital, the moon is reduced to her last quarter rather frequently—once a month at least. She is a dissipated old planet, up late at night and filling her "horn." When the moon diminishes in size she is said to be "on the wane." It would be natural to infer that when "full" she is "on the drink." We often hear the weather-wise (and pound foolish) speak of a "dry moon," and it is a noticeable fact that drinking people get dry oftener than anybody else.

It has long been a subject of speculation among the scientific, whether or not the moon is inhabited. The only evidence we have that it was inhabited is the nursery rhyme about the man in the moon, who came down too soon, to make inquiries concerning the most direct route to Norwich, but there is nothing to show that he ever went back again. He might have been the only man there, and "came down too soon" to have any progeny, through whom to perpetuate the race. He probably wasn't much struck with the moon—or moon-struck, as the books have it—and hurried away. But how did he get there in the first place? There must have been a time when the moon was nearer the earth than now; so near, in fact, that a cow of tolerable agility could jump over it. The nursery rhyme makes mention of one who accomplished that feat to the inspiring music of

"High—diddle diddle,
The cow and the fiddle."

If a new milch cow could jump over it, how easy it must have been for a man to jump on it. Some crusty old bachelor has said the reason sentimental Misses languish so much about the moon, and are so fond of looking at it and quoting poetry about it, is because there is a man in it. If it would not be unfair to make an investigation, you would find that the man wasn't in the moon, nor nearly so far away.

GIRLS IN THE GARDEN.

If there is any one thing more beautiful than another in a garden of flowers, that *thing* is a beautiful girl, with a sun bonnet on her head so wide and capacious that you have to get right square before her and pretty near her, to see the glowing cheeks that are sure to be there, if she is at all accustomed to garden walks and works. Physically, there can be nothing better for daughters, and, indeed, for many wives, than to take sole charge of a small flower garden.

The benefits derived from early rising, stirring the soil, snuffing the pure morning air, are freshness and glow of cheek and brightness of eye, cheerfulness of temper, vigor of mind and purity of heart. Consequently she must be more cheerful and lovely as a daughter, more dignified and womanly as a sister, and more attractive and confiding as a wife. If you have not the dooryard ground, then get a dozen pots and plant the seeds of flowers to your taste. The care and attention required to rear and train the growing plants, occupies the mind to the exclusion oftentimes of sensation novel reading, a senseless waste of time. You listless, pale-faced, fragile thing of a girl, throw off your mock delicacy, put on gloves if you will, but work in the flower garden, till your cheeks vie in color with the blush of the rose you cultivate.

ENOLA.

What shall we do for the heart that is hurt?
How shall we freshen the cheek that is pale?
Strengthen the footsteps that falter and fail—
Brighten the eyes of Enola?

The sunshine is out of the trail of her hair;
The waist in her girdle's too slender by half;
Gone is the ravishing, low little laugh
From the blossomy lips of Enola.

Her necklet of pearls was broken to-day;
Some fell in her bosom, and some to the ground
Slid whitely and brightly, with never a sound,
Like tears from the face of Enola.

If the lover who left her should seek her to-night
And put back the ring that she misses the most,
It would not stay on, but slip off and be lost
From the poor little hand of Enola.

HOWARD GLYNDON, *in The Galaxy.*

GIRLS SHOULD NOT TALK SLANG.

Girls, don't talk slang! If it is necessary that any one in the family should do that, let your big brother, though we would advise him not to talk "pigeon English" when there is an elegant, systematized language that he can just as well use; but don't *you* do it. You have no idea how it sounds to ears unused or averse to it, to hear a young lady, when she is asked to attend some place of amusement, answer, "Not much;" or if requested to do something she does not wish to, "Can't see it!"

Not long ago we heard a Miss, who is educated and accomplished, say, in speaking of a young man, that she intended to "go for him;" and when her sister asked her assistance at some work, she answered, "Not for Joe."

Now, young ladies, of unexceptionable character and really good education, fall into this habit, thinking it shows smartness to answer back in slang phrases; and they soon slip flippantly from their tongues with a saucy pertness that is neither lady-like nor becoming. Young men who talk in that way do not care to hear it from the lips they love or admire—it sounds much coarser then; and, really, slang does not save time in use of language as an abbreviation. "No" is shorter and much more decided than "not much;" "I am sure," is quite as easily said as "I'll bet."

HOW DID SHE DO IT?

Here is a rather bare-faced story of how a Dublin chambermaid is said to have got twelve commercial travelers into eleven bedrooms, and yet to have given each a separate room. Here we have the eleven bed-rooms:

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |

"Now," said she, "if two of you gentlemen will go into No. 1 bed room, and wait there a few minutes, I'll find a spare room for one of you as soon as I have shown the others to their rooms." Well, now, having thus bestowed *two* gentlemen in No. 1, she puts the third in No. 2, the fourth in No. 3, the fifth in No. 4, the 6th in No. 5, the seventh in No. 6, the eight in No. 7, the ninth in No. 8, the tenth in No. 9, and the eleventh in No. 10. She then came back to No. 1, where you will remember she left the twelfth gentleman along with the first, and said: "I have now accommodated all the rest and still have a room to spare, so if one of you will please step into No. 11, you will find it empty." Thus, the twelfth man got his bed-room. Of course there is a hole in the sauce-pan somewhere; but we leave the reader to determine exactly where the fallacy is, with just a warning to think twice before deciding as to *which*, if any, of the travelers was the "odd man out."

WHAT HE KNOWS OF FARMING.

The editor of the *Trenton Sentinel* has been telling what *he* knows of farming, and this is a part of his first essay:

Castor-oil beans succeed best in the bowels of the earth. They will soon work their way out.

The best preparation for hops is a toad or two in each hill. They will make the vines fairly jump.

The usual time to put in rye is early in the morning. Some husbandmen, especially those of the city, continue to run it in at intervals of half an hour, until bed-time. The practice is only allowable in case of a dry season.

In reaping wheat, never take it by the beard. It is found to go against the grain.

Corn in the ear is apt to affect the hearing. If eaten green, it will make the voice huskey. When dealt out as army rations, the kernel should always be served first, and the men private-ly.

Never plant your potatoes early. It is the early potato that gets the worm. It is up-hill work with them after that.

In making cider out of apples, I found it a pretty tight squeeze, notwithstanding my long connection with the press. Never drink cider made from crab apples. It is pretty certain to "go back on you." If you would lay in a supply of old wine, be sure to make it of elder-berries.

HASTY FRIENDSHIPS.

Some people are constantly acquiring "dear friends." Ladies of an impressible nature have been known to add two or three to their list every week during the visiting season. We men are not, generally speaking, as apt to rush in friendship as the more amiable sex; yet many of us contract friendships in haste, that we repent of in leisure. True friends are scarce articles. They cannot be picked up at the rate of a dozen a season at dinner-parties or balls. Will the ladies excuse us for saying that men's friendships are in most cases stronger than theirs? A lady's "very dear," or even "dearest friend" of her own sex is apt to fall from favor if she tries to compete with her affectionate sister even in so small a matter as dress. The charming creatures who walk with their arms linked around each other's wastes, and exchange kisses and confidences daily, are not, as a general thing, so closely wedded together by mutual affection but that envy or jealousy may part them, or even make them enemies.

MAKE HOME ATTRACTIVE.

Make your homes radiant within with every social virtue, and beautiful without by those simple adornments of which nature is everywhere so prolific. The children born in such homes will leave them with regret, and come back in after-life as pilgrims to a holy shrine; the town on whose hills and in whose vales such homes are found will live forever in the hearts of its grateful children.

"Refined homes," as the New York *Nation* happily expreses it, "are the end of civilization. All the work of the world—the railroading, navigating, teaching, writing, fighting, are done, first of all, to secure each family in the quiet posession of its own hearth; and, secondly, to surround as many hearths as possible with grace and culture and beauty. The work of all races for five thousand years is represented in the difference between a wigwam and a lady's parlor. It has no better result to show.'

GOOD MANNERS.

Young folks should be mannerly. How to be so is the question? Many a good girl and boy feel that they can't behave themselves in the presence of company. There is but one way to get over this feeling, and acquire easy and graceful manners; that is, to do the best they can all the time at home, as well as abroad. Good manners are not learned by arbitrary teaching so much as acquired by habit. They grow upon us by use. We must be courteous, agreeable, civil, kind, gentlemanly and womanly at home, and then it will become a kind of second nature to be so everywhere. A course, rough manner at home begets a habit of roughness, which we cannot lay off if we try when we go among strangers. The most agreeable people we have ever known in company, are those who are perfectly agreeable at home. Home is the school for all good things, especially for good manners.

NOT "THE GIRL OF THE PERIOD."

The young lady who rises early, rolls up her sleeves, and walks into the kitchen to get breakfast, or assist in doing so, and afterwards with cheerfulness and sunny smiles, puts the house in order without the assistance of her mother, is worth a thousand parlor beauties, who from want of exercise, almost die of laziness. The former will make a good wife and render home a paradise; the latter is a useless piece of furniture, and will, to the annoyance of the household, go whining to her grave.

LITERARY NOTES.

The October number of *Scribner's Monthly*, closes the fourth volume. It has kept up to its high standard as a popular family magazine, so far, and promises many attractive things for the next volume. With Dr. Holland at its head, it will not be likely to fall behind the best of its competitors in the sphere it has chosen. "On the Tobacco Plantation," and "In and About Paris," are its principle illustrated articles in the present number, and both the articles and their illustrations are excellent. [Scribner & Co., New York; $4 a year.]

The Atlantic Monthly has a Scandinavian contributor with the euphonious name of Hjalmar Hjorth Boyeson, who puts into very creditable English verse, for that magazine, beautiful Norse legends and balads. We like, particularly, one in the October number, entitled "Thoralf and Synnöv." Professor DeMille's

absurd "Comedy of Terrors," develops in the same number several more of its impossible situations. It is a relief to turn from it to the opening chapters of one of Henry James, Jr's, strikingly original stories "Guest's Confession," or to Mrs. Leonowen's simple, but pathetic tale of "L'ore, the Slave of the Siamese Queen." There are few magazines that have so little in them that is "trashy." It may be provincial and "Bostonish," but is high-toned and replete with vigorous writing. [Jas. R. Osgood & Co., Boston; $4 a year.]

Mr. George Henry Felt has recovered, it is said, the "Kabellah" of the Egyptians, and has written a work in which, by the use of it, he has furnished a complete key to all the works of Art in antiquity and of Nature itself; elucidated the origin of language, written or spoken, hieroglyphic or figurative, thus showing the hidden and true meaning of the Old and New Testament, as well as explaining Masonry and other ancient mysteries. J. R. Osgood & Co. are to publish the book this fall.

A new edition of the Poems of Henry Timrod, edited with a sketch of the poet's life, by his friend and brother poet Paul H. Hayne, is to be published by subscription for the benefit of the author's family. We trust our citizens will show their appreciation of one of the greatest poets the South ever produced, as well as their benevolence and patriotism, by subscribing for the work.

Oliver Optic's Magazine comes to us regularly, and is always bright, sparkling and fresh, and always full of just the kind of reading that young folks delight in. It comes very near, at least, to justifying the remark of one of the boys who takes it, that "it is the best magazine in the world, or *anywhere else.*" [Lee & Shepard, Boston; $2 50 a year.]

The Eclectic Magazine never flags in interest, and the good taste and excellent judgment with which it is edited, commend it to every one who can appreciate pure literature in its best form. Its leading feature in the way of fiction, has been for some time that charming story "The Strange Adventures of a Phæton," which grows in interest as it advances. [E. R. Pelton, New York; $5 a year.]

G. Custis Lee, President of the Washington and Lee University at Lexington, Va., is said to strikingly resemble his father, General Lee. He is about thirty-nine years of age, one of the best scholars West Point has ever produced, modest and retiring to a fault, with great executive and organizing ability, and a wonderful influence over men.

Dr. Elliott Coues, one of the most distinguished of our younger naturalists, has written a work on ornithology, giving a complete account of the present state and results of that science. It gives a concise account of every species of living and fossil bird at present known in North America, and will be well illustrated with steel plates and wood cuts.

At the recent Commencement of Cornell University, Ithaca, New York, the Woodford prize of one hundred dollars, for the best oration, was taken by A. L. Rader, a Confederate soldier, from East Tennessee. This noble young man has covered all his expenses for two years at the Cornell University by his own labor.

SCIENTIFIC MEMORANDA.

Honey Dew.

M. Bousingault has examined the sweet exudation which appears on the leaves of certain trees and shrubs, and finds that "it is composed of about 55 per cent. of cane sugar, 25 of inverted sugar, and 20 of dextrine. In the healthy state the sugars elaborated by the leaves of these trees, under the influence of light and warmth, pass into the tissues of the plant by the descending sap, but in certain diseased conditions these saccharine products accumulate on the upper surface of the leaves."

Curious Facts about Rain.

It is stated as a curious fact that as the settlements spread beyond the Mississippi, rains increase both in frequency and amount of water. Many beds of streams, which were uniformly dry in summer only ten years ago, are now full through the year. Travellers say the Laramie plains were once destitute of vegetation; now they have a luxuriant growth, and will raise large crops of wheat. Denver was built on the banks of an extinct creek, perfectly dry. Now it is full of water, and needs to be crossed by bridges. Salt Lake is seven feet higher than ten years ago, and is steadily rising.

Making Tea.

"The definite effects sought from tea-drinking over and above the mere comfort given by the hot liquid," *The Lancet* says, "are produced by two ingredients of the leaf,—the alkaloid *theine* and the aromatic matter. The latter is what is chiefly valued by the refined connoisseur of tea; and accordingly he (or she) makes tea by pouring perfectly boiling water on a pretty large allowance of leaf, drinking off the first infusion and rejecting the rest.

Tea Tippling.

The women of the English working classes are said to make tea one of their principal articles of diet, instead of an occasional beverage, drinking it several times a day, and that the result is a lamentable amount of sickness. Tea in anything beyond moderate quantities is as distinctly a narcotic poison as is opium or alcohol. It is capable of ruining the digestion, of enfeebling and disordering the heart's action, and of generally shattering the nerves.

Effects of a Dry Atmosphere.

Speaking of the climate of the Argentine Republic, Professor Gould says: "A bowl of water left uncovered in the morning is dry at night; ink vanished from the inkstand as if by magic. The bodies of dead animals dry up instead of decomposing, and neither exercise nor exposure to the sun's rays produces perpiration."

Railway Magnetism.

Dr. Richard Owen says that every iron rail on a north and south railway so far as he has been able to examine, is a perfect magnet, the north end attracting the south pole and the south end the north pole of a magnetic needle. So, also, in a T rail on such a railroad, the lower flange attracts the south pole and the upper flange the north pole of a needle.

INDUSTRIAL ITEMS.

There is a canning and pickling establishment in Chicago which turns out 6,000 cans of fruit and vegetables; one half ton of jellies, and 400 cases of glass jars of pickles per day. This does not include the sauces, syrups and catsups that are put up in both large and small packages. The contract for glass ware, for this season, amounts to over $30,000. The bills for printing plain and colored labels, many of which are very finely executed, average $400 per month; while the bill for empty boxes for packing canned goods amounts to a like sum.

The South says that Mr. Robert Bunker, of Rochester, has recently received from Japan about twenty eggs of the oak-eating silk worm. A great proportion of these have hatched, and Mr. Bunker thinks the enterprise one that will pay handsomely. This silk worm does not feed on the mulbery, but on the common oak leaves, which it devours with great voracity. In size, it is about twice as large as the ordinary silk worm, and its cocoon is in the same proportion.

A gentleman in California has some 75,000 vines on the high rolling land at the upper end of his place, and proposes to keep on planting until his vineyard will cover from one to two thousand acres. The land is well adapted to the vine, and is of but little account for any other purpose without irrigation.—The varieties of grapes cultivated have been selected with a view to the production of raisins, a large proportion being the Muscat of Alexandria.

According to Dr. Daniel Lee, if good red clay, burnt as in making brick, be mixed with an equal weight of fresh-slaked lime, and a quantity twice that of the lime of clean sharp sand be added, a compound will be formed which will harden under water equal to the best hydraulic cement. For this artificial cement magnesian lime is better than pure lime.

An experienced silk culturist, who has lately been visiting California and "taken notes," reports that the white mulberry grows easily in that climate. He is of the opinion that California will, in the course of a few years, be the silk-producing country of the world, and that he has seen finer specimens of the silk worm in California than even in Japan.

A French colony in Franklin, Kansas, has established a velvet manufactory at that place, the first in the United States. Aside from this enterprise they are said to have fine farms under cultivation and own numerous stores, dwellings, etc.

An obdurate screw may sometimes be drawn by applying a piece of red hot iron to the head for a minute or two, and immediately using the screw driver.

Removing Stains.—Almost any stain, or iron mold, or mildew, may be removed by dipping in moderately strong citric acid, then covering with salt and placing in the sun. Repeat the process if necessary.

For our Young Folks.

CALLING THE COWS.

Over the hill the farm-boy goes—
His shadow lengthens along the land,
A giant staff in a giant hand;
In the poplar tree, above the spring,
The katy-did begins to sing.
The early dews are falling—
Into the stone-heap darts the mink;
The swallows skim the river brink;
And home to the woodland fly the crows,
When over the hill the farm-boy goes,
Cheerily calling—
"Co', boss! co', boss! co'! co'! co'!"
Farther, farther, over the hill,
Faintly calling, calling still,
"Co', boss! co', boss! co'! co!"

Into the yard the farmer goes,
With grateful heart at the close of day;
Harness and chain are hung away;
In the wagon-shed stands yoke and plough,
The straw's in the stack, the hay in the mow,
The cooling dews are falling;
The friendly sheep his welcome bleat,
The pigs come grunting to his feet,
And the whinnying mare her master knows
When into the yard the farmer goes,
His cattle calling—
"Co', boss! co', boss! co'! co! co!"
While still the cow-boy, far away,
Goes seeking those that have gone astray,
"Co', boss! co', boss! co'! co'!"

THE BROKEN SAW.

A boy went to live with a man who was accounted a hard master. He never kept his boys; they ran away or gave notice they meant to quit; so he was half the time without, and in search of a boy. The work was not very hard—opening and sweeping out the shop, chopping wood, going errands, and helping round. At last Sam Fisher went to live with him. "Sam's a good boy," said his mother. "I should like to see a boy now-a-days that has a spark of goodness in him," growled the new master.

It is always bad to begin with a man who has no confidence in you; because, do your best, you are likely to have little credit for it. However, Sam thought he would try; the wages were good, and his mother wanted him to go. Sam had been there but three days, before, in sawing a cross-grained stick of wood, he broke the saw. He was a little frightened. He knew he was careful, and he knew he was a pretty good sawyer, too, for a boy of his age; nevertheless, the saw broke in his hands.

"And Mr. Jones will thrash you for it," said another boy who was in the wood-house with him.

"Why, of course I didn't mean it, and accidents will happen to the best of folks," said Sam, looking with a very sorrowful air on the broken saw.

"Mr Jones never makes allowances," said the other boy. "I never saw anything like him. That Bill might have stayed, only that he jumped into a hen's nest, and broke her eggs. He darn't tell of it; but Mr. Jones kept suspecting and suspecting, and laid everything out of the way to Bill, whether Bill was to blame or not, till Bill could'nt stand it and wouldn't."

"Did he tell Mr. Jones about the eggs?"—asked Sam.

"No," said the boy; "he was 'fraid; Mr. Jones has got such a temper."

"I think he'd better own up at once," said Sam.

"I suspect you'll find it better to preach than to practice," said the boy. "I'd run away before I'd tell him." And he soon turned on his heel and left poor Sam alone with his broken saw.

The poor boy did not feel very comfortable or happy. He shut up the woodhouse, walked out into the little garden, and then went up to his little chamber under the eaves. He wished he could tell Mrs. Jones, but she wasn't sociable, and he would rather not. "O, my God," said Sam, falling upon his knees, "help me to do the thing that is right."

I do not know what time it was, but when Mr. Jones came into the house the boy heard him. He got up, crept down stairs, and met Mr. Jones in the kitchen.

"Sir," said Sam, "I broke your saw, and I thought I'd come and tell you 'fore you saw it in the morning."

"I should think morning would be soon enough to tell of your carelessness. Why do you come down to-night?"

"Because," said Sam, "I was afraid if I put it off I might be tempted to tell a lie about it. I'm sorry I broke it, but I tried to be careful."

Mr. Jones looked at the boy from head to foot, then stretching out his hand, "There, Sam," he said heartily, "give me your hand. Shake hands; I'll trust you Sam. That's right; that's right. Go to bed, boy. Never fear. I'm glad the saw broke; it shows the mettle's in you. Go to bed."

Mr. Jones was fairly won. Never were better friends after that than Sam and he. Sam thinks justice has not been done Mr. Jones. If the boys had treated him honestly and "above-board," he would have been a good master to live with. It was their conduct which soured and made him suspicious. I do not know how this is; I only know that Sam Fisher finds in Mr. Jones a kind and faithful master.

Domestic Economy.

HOUSEHOLD NOTES.

Iron in Water.

Iron becomes rusty only in water that contains air; because it is the oxygen in the air, contained in the water which unites with the iron to produce rust. The rusting of iron in water then removes the oxygen of the air from the water. But water in which there is no oxygen or atmospheric air cannot become putrid. To prevent water from becoming putrid, we have, therefore, only to put in some bits of iron. Some pices of sheet iron (not rusty) or iron turnings are the best. Cast iron is not so good. So the offensive smell from the water in the vases of flowers will be prevented by a few small nails or bits of sheet-iron in the bottom of the vases.

The Philosophy of Frying.

We have spoken of frying as the most unhealthful mode of cooking. As frying is usually done, it certainly is so; but a writer in *The Christian Union* shows that there is a scientific way of using the frying pan, which obviates most of the objections to it. The principal points to be attended to are: First, to use plenty of fat, so as to cover the article to be cooked, and, second, to have it *boiling hot* when the article is put into it. This instantly creates a thin crust over the whole, which no fat can penetrate, while tepid fat would perfectly saturate it and not only prevent proper cooking, but render it wholly indigestible and unfit for food. This, in few words, is the philosophy of frying.

RECIPES.

Cooking Spinach.—In cooking even so simple a thing as a mess of greens, the manner of doing it makes a great difference in its taste and digestibility. This is a good way: Having washed the spinach, put into a tin-kettle, without water, or only that which may remain after washing; put this kettle *inside* of another containing water. When the spinach is well *stewed* (not boiled,) take it up and drain it without pressing, as that will make it tough and dry. Then chop it small, and add some hard boiled eggs also chopped; season with pepper and good butter; mix it well; return to the kettle, and stew a quarter of an hour. It is then delicious.

Home-Made Candy.—Use a new tin-basin; put into it four tablespoons of water, one pound of good coffee sugar, one teaspoonful of good cream tartar; boil, stirring constantly to avoid burning. After it begins to have a soapy appearance try it often by dropping a little in cold water, and if done it will at once become brittle. Butter an earthen dish and pour the hot candy into it, that it may cool just enough to handle. Flavor to taste with oil of peppermint, winter-green, sassafras or lemon. Two drops of oil will flavor it strong. For variety, divide into three or four parts and flavor differently by touching one kind of oil to each. Work in the hands at once; the more it is pulled the whiter it will get.

Syrup of Coffee.—*La Semaine Agricole* has the following recipe: Take a half a pound of the best ground coffee, put it into a saucepan containing three pints of water, and boil it down to one pint. Cool the liquor; put it into another saucepan (well scoured) and boil it again, adding white sugar enough to give it the consistency of syrup. When cold put it into bottles and seal. It is an excellent thing to use in travelling. Put two teaspoonfuls of the syrup into an ordinary coffee-cup and fill it with boiling water, adding milk, if you can get it.

Fig Leaf Yeast.—Take a double handful of leaves and put on them one quart of cold water; boil them until it makes a strong tea; when cold, strain; add as much flour as will make a thick batter; set it aside to rise; when bubbling add as much corn meal as will make it into cakes. A correspondent of *The Rural South-Land* says this is better than hop yeast. For winter use, dry the leaves in the shade.

Greening Pickles.—Digest the fruit or vegetables for some time in boiling salt water. Then take them out and pour boiling hot vinegar over them. On the third day take them out of the vinegar, boil the latter, and again pour it over them while hot. It is said that this process, a few times repeated, will produce a dark green color. It is safe to try it, but don't try *verdigris*.

Preserving Dried Fruit.—It is said that dried fruit may be protected from worms by putting away with it a little bark of sassafras, a large handful to a bushel.

BARLEY AND BREAD SOUP.—Take three ounces of barley, one and a half ounces of stale bread crumbs, one and a half ounces of butter, one half ounce of salt, and one quarter ounce of parsley. Wash the barley and steep it for twelve hours, in one-half pint of water, to which a piece of carbonate of soda, the size of a pea, has been added; then pour off the water not absorbed, and add the crumbs of stale bread, three quarts of boiling water and the salt. Digest these in a salt glazed covered jar in the oven, or boil them slowly in a well tinned covered pan for from four to six hours, adding the chopped parsley with the butter thirty minutes before the expiration of the time of boiling.

PUBLISHERS' DEPARTMENT.

	1 mo.	2 mos.	3 mos.	4 mos.	5 mos.	6 mos.	7 mos.	8 mos.	9 mos.	10 mos.	11 mos.	1 year.
1-16 col.....	$2 00	$3 75	$5 25	$6 50	$7 50	$8 50	$9 25	$10 00	$10 50	$11 00	$11 50	$12 00
1/8 col.....	3 00	5 25	8 00	9 75	11 50	13 00	14 50	15 75	17 00	18 00	19 00	20 00
1/4 col.....	5 00	9 00	12 75	16 25	19 75	23 00	26 25	29 25	32 25	34 75	36 75	38 00
3/8 col.....	7 50	14 00	20 00	25 50	30 50	35 00	39 00	42 50	45 50	48 25	50 75	53 00
1/2 col.....	9 00	16 50	23 50	30 00	36 00	41 50	46 50	51 00	55 00	58 75	62 00	65 00
5/8 col.....	11 50	19 75	27 50	34 75	41 50	48 00	53 75	59 00	63 75	68 00	71 75	75 00
3/4 col.....	13 00	21 50	29 75	37 75	45 50	53 00	60 00	66 25	71 50	76 50	80 50	84 00
7/8 col.....	14 00	23 50	32 75	41 50	49 75	57 50	64 50	71 00	77 00	82 50	87 50	92 00
1 col.....	15 00	25 50	35 50	45 00	54 00	62 50	70 50	78 00	85 00	91 00	96 00	100 00
3/4 page.....	20 00	33 50	46 50	59 00	71 00	82 50	93 50	104 00	114 50	124 00	133 00	140 00
1 page.....	25 00	45 00	64 00	82 00	99 00	115 00	130 00	144 00	156 00	166 00	174 00	180 00

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Notices and articles of personal interest may be inserted in the Publishers' Department at special contract rates. This is a *new* feature, and affords an advertising space always good, but especially so *now* as it is novel. We shall be pleased to estimate for notices, etc., in this space.

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To enable our subscribers to preserve THE RURAL CAROLINIAN, we will bind in full cloth, gilt back and sides, so as to make a handsome volume for $1, or we will forward the cases for 50 cents. Or, we will bind in half leather, liberary styles for $1 25 per volume. These prices exclusive of cost of transportation. Postage cost 48 cents, and express freight to any point on the South Carolina Railroad, Northeastern Railroad, or Savannah and Charleston Railroad, 25 cents.

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THE GREAT "ECLIPSE" COTTON PRESS, MANUFACTURED by R. FINDLAY'S SONS, Macon, Ga., seems to be outstripping all the others in the race for public favor. Great strength, durability, rapidity in packing, and the exceedingly light draught, has already rendered it the favorite from NORTH CAROLINA to TEXAS. *Four hands*, (or one light mule,) with PERFECT EASE, packs a bale of cotton weighing from *five hundred to seven hundred pounds* in *two-and-a-half to three minutes;* requiring but 12 REVOLUTIONS of LEVERS The very light draught, with such speed, is the result of the wonderful anti-friction device, an entirely new feature. This Press gained the victory last month, over all competition, in the Grand Prize Contest of Cotton and Hay Presses, at the Great Exposition at Nashville, Tenn. In fact, the "Eclipse" has NEVER FAILED to *far excel*, wherever brought in competition with any of the other screw or lever presses. A new and ingenious arrangement has recently been added, by which all the doors are simultaneously opened, after a bale is packed, without the use of hammer or maul, etc. The "Eclipse" is PERFECTION: and the proprietors bind themselves to refund price in case of dissatisfaction, and to make good any defect in material and workmanship that may show itself in THREE YEARS.

The "*Craig Patent Horse Power*," by same Firm, is also rapidly winning golden opinions. The same garantee of satisfaction given. These machines are no "Yankee Tricks," but were invented at Home, are made at Home, and guaranteed by Home Folks. See cards and testimonials in advertising columns.

THE BUIE INSTITUTE.

Miss Mary Ann Buie (C. S. F.) begs to thank the officers of the South Carolina Rail Road Company for their kindness in rendering her every assistance in establishing her female Institute in the town of Aiken, S. C., one of the most suitable localities in the land. Miss Buie begs to inform her friends everywhere that she has secured the assistance of General G. J. Rains, to lecture on astronomy and chemistry, and to teach mathematics and the languages. None but the ablest teachers will be employed in her Institute. Every thing will be taught that is taught in any school in New York and Baltimore. Miss Buie begs to inform all her friends who have sympathized with her since the war and have promised to aid her when they saw her succeeding, that she has secured an elegant building on a hill, with pleasant surroundings, and will be able to purchase her Institute by the liberal patronage of her friends. She has taught in all her schools free pupils at her own expense, as her donations have not yet been paid. She begs the co-operation and aid of all who feel an interest in education. She will have a free school separate from her Institute.

M. A. BUIE, *Principal.*

A TEMPTING TABLE.

Nothing is more gratifying to a person with a delicate appetite than to have meals set out in fine China. It gives to everything a more tempting look. If you wish your delicate wife or invalid daughter to eat with a better relish, and have a more cheerful face at dinner, you should at once supply your table with a set of fine French China, from W. G. Whilden, corner of King and Beaufain streets.

WILCOX & GIBBS' SEWING MACHINE.

This great Southern invention is fast superseding the complicated lockstitch and double thread machines, both in Europe and America. Nearly 7,000 lockstitch machines were exchanged in part payment for the Wilcox & Gibbs in one year in New York city. One dealer there has made oath that he alone received in exchange for the Wilcox & Gibbs' Machine 700 Wheeler & Wilson, 300 Singer, 300 Grover & Baker, 200 Howe, and 1,275 of other makers.

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Tornillo or Screw Bean, (*Strombocarpus pubescens.*)
USED AS FOOD BY THE INDIANS OF ARIZONA.

THE
Rural Carolinian.

Progress with Prudence, Practice with Science.

D. H. JACQUES, EDITOR.

Vol. IV.] CHARLESTON, S. C., NOVEMBER, 1872. [No. II.

Thoughts and Suggestions for the Month.

The early maturity of the cotton crop, this season, has enabled our planters to get most of it already picked, and, unfortunately, too much of it into market; giving the impression, from the heavy receipts, compared with the same dates last year, of a much heavier crop than has really been made. We may mistake, but we firmly believe that those who can hold back their crops will get better prices. In any event, let all cotton be ginned and baled as soon as possible, so as to be able to take advantage of any favorable condition of the market. The cotton is safer too in bales than lying loose in the gin house. A liberal use of bagging will pay. It is poor economy to leave parts of the sides and ends of the bales exposed. The whole should be neatly covered, for even in so strictly a non-fancy article as cotton, a tidy package helps the sale. Having your crop carefully ginned, well baled and fully *insured*, much anxiety concerning it will be avoided. The insurance premium is a comparatively small matter, but it may save you from pecuniary ruin.

———In regard to the small grains the views of the RURAL CAROLINIAN are well known. We have advocated, and still do advocate, the more extensive planting of wheat, oats, rye and barley; but we hope none of our readers will understand us as recommending every planter and farmer to attempt to raise all these grains, or any particular one of them, regardless of the character of his soil and other conditions affecting the crop. Wheat cannot be made a paying crop on every plantation. In the cotton belt, its success is, perhaps, rather the exception than the rule. But where it will pay, plant wheat, by all means. Oats—getting the red, rust-proof variety—succeed much more generally and there are few plantations, we believe, on which, with the proper preparation of the soil and *early planting*, they cannot be made a profitable crop; and the same is true of rye. Barley must have a good, well enriched soil, and it will pay to manure heavily for it. We believe in early sowing, but better sow any time during this month than not at all.

———Corn in the crib is often badly damaged by the weevil. Various remedies have been proposed, but perhaps none of them have proved universally suc-

cessful. Insects generally dislike the smell of coal tar, and a small quantity of it in the crib will, it is said, cause the weevils to leave. Our own experience seems to confirm this, for a crib, a part of which received annually, on the inside, a coat of tar, was never infested with weevils. Elder leaves and sassafras chips or leaves, thrown in with the corn, are also said to be effective remedies, but these we have not tried. We should be glad to have the experience of any reader who has, or who can give us a sure remedy for the weevil in corn.

———We cannot refrain from calling the attention of our readers again to the value of fall ploughing. We are aware of the practical difficulties which, in a cotton growing country, lie in the way of the general application of some of the most excellent principles of agriculture, and that it is easier to talk of the benefits of breaking up the soil, and turning under the weeds and grass in the fall, than to find the time and labor to accomplish it. While there is cotton to pick, what else can be done? The fact remains the same. It is a most desirable thing to break up corn and cotton land in the fall. Let those who can do so try it.

———A patch of rye, (drilled in,) for cutting as green feed during the winter, and the early part of spring, should never be lacking on any plantation or farm, large or small; and there should also be a winter pasture of rye or barley sown broadcast. These should have been planted in September or October, but it is not yet altogether too late. The land must be well manured to give satisfactory results. He can hardly be called a good farmer who neglects to provide, in every possible way, for the sustenance and comfort of his stock.

———Ditching, draining, building fences, making composts, and the general clearing up work of the plantation or farm, are in order any time during the fall and winter, when nothing else may press. The later these necessary operations are put off, the less likely they are to be well done, and the greater the danger that crops will fail for the lack of the wasted manure, or for want of proper drainage in the land, or be destroyed by stock, because fences, which needed rebuilding, were merely patched. If there be any time when there is nothing to do on the plantation or farm, we never found it out; and, thanks to our fine climate, there is no time when we cannot work.

———The long evenings of the fall and winter give the farmer time for reading and for social intercourse. A few dollars spent for books and periodicals will now be well spent, even if some luxury or indulgence be sacrificed to obtain them. The meetings of the farmers' club or the Grange should never be neglected, when it may be possible to attend; and while striving to make them profitable in a business sense, they should also contribute to the culture of the mind and the heart—still higher and better ends.

———Agricultural fairs have their lessons for the farmer, and if he will give the ploughing matches, the trials of implements and farm machinery, and the improved stock as close attention as he does the horse-racing and the tournament, he cannot fail to learn something that will be useful to him. South Carolina readers should bear in mind the State Fair at Columbia, opening on the 4th of the present month.

Ramie and Jute in Louisiana.

In the editorial department of the July number of the RURAL CAROLINIAN, I notice the following: "Has ramie proved a success? and if not, why?"

On the *rich, well drained* alluvial land of Louisiana the ramie grows abundantly well, with very little attention and cultivation. We are sure of three full crops in the season. Under favorable circumstances, I see no reason why we may not get a fourth. The preparation of the fibre for market is *the* difficulty *yet* to be overcome. *We have no machine in this State that can be made to prepare the fibre in quality and quantity that will pay,* consequently the ramie growers are very much discouraged at this time. Several parties have been experimenting with machines in this Parish, but with indifferent success, so far. We have been very anxiously hoping to hear of the success of at least one of the thirty-seven machines, reported at Calcutta in April last as being (then and there) ready to compete for the prize of £5,000, offered by the British Government for a machine that would successfully fill the requirements of the various growers.

I am in correspondence with a gentleman of California, who is growing the ramie in that State. In his letter (received recently) he encloses me a sample of ramie fibre, very well prepared by a California machine. He says this machine will prepare five to six hundred lbs. per day, with but little power and labor. This I consider encouraging, but too late to save the crop now growing in the State.

The experiment which I have been able to make with jute this season is very flattering. The Agricultural Department at Washington sent me a small quantity of seed in April, some of which I planted in drills three and a half feet apart, some in chops four feet by two, and some was broad-casted. The weather being very dry at the time, and continuing so for two weeks, I was afraid I had lost my stand. The third day after a shower the young plants appeared quite thick, and grew off rapidly; such as were in drills and chops, I had the cultivator passed through once, and had weeded once with the hoe; nothing was done to the broad-cast. Previous to planting the land had been ploughed and harrowed, as for corn or any other crop. In three months from planting, the jute measured eight to nine feet in height. On the 10th of July I cut a lot of the most advanced, and put the same in water. On the eighth day the leaves and outer coating of bark had entirely rotted away, and the fibre stripped perfectly from the woody stem. On the 15th of July I planted again that portion of land which was cut off on the 10th, and have now growing a crop of jute six feet high, (jute two months from seeding.) I made two plantings in August, and one again on the 7th of September. The last planting may get checked by frost, but if cut immediately after frost, the fibre will not be injured. This is all on a small scale, merely to give us some idea of what we may be able to do with this most valuable textile in our poor, down-trodden South.

The April plants are now, by Mr. Derby's direction, (see RURAL CAROLINIAN, December, 1871,) in condition to be converted into fibre. The plants are now from ten to thirteen feet in height. The seed pods, or hulls, are about the size and shape

of medium cherries.* The plants are putting out more bloom, although some of the pods are nearly ripe. I sent some of the fibre I prepared in July to New York. There is great demand for it at six cents per lb.

Until further experiments, I shall continue to think that the plant should be cut for fibre sooner than recommended by Mr. Derby. Such as I cut just before the plant commenced to bloom, *every* part of the fibre is beautiful and white. Such as I have cut recently will have to be assorted, and the buts separated, (two and a half to three feet from tho extreme lower end,) and the upper fibre is not altogether without dark red stains. The upper fibre is worth six cents, the buts four cents. For further information regarding the uses and demand for the jute fibre, I can only refer to RURAL CAROLINIAN, for December, 1871, and January, 1872.

Desiring to save as much seed as possible from the small patches we have growing, I could not, except on a very limited scale, make an average yield per acre. I did this, however, as accurately as it was in my power. The drilled, (which was on the highest land on the place, and suffered much from the very dry weather throughout August, and up to this date in September,) I am almost sure would have returned 3,200 lbs. of fibre per acre. From the chopped, which was in low, *very* rich land, I am as confident of getting two tons per acre. I also selected a number of large stalks, which averaged two and a half ozs. of fibre per stalk. Of the broad-cast I did not attempt to make an estimate. About one half of the patch was matted with coffee weed, the balance is one dense mass of jute.

My observation of the jute plant has led me to the following conclusion: Plant only *rich* alluvial soil. Plough, harrow, and have the soil in good order. Drills three and a half feet apart, (plant flat or on ridges—I prefer flat.) Cultivate or not, as you may see necessary, or feel disposed. Three pounds of seed should plant an acre. It will be almost impossible to put in these very small seeds regularly by hand. A rice or wheat drill machine may be made to do the work well by using every other spout or drill. Cover half inch deep or less. For fibre, have four or five stalks to every foot in the drill. For seed, much less will answer. The cutting can be done with a mower, or in any other way most convenient. Bind in convenient sized bundles and put *under* water. Filthy water will do more in preparing the fibre in six days, than clear well in twelve. Planters will make their own calculations as to cost in money and labor per acre. Jute is a safe crop. If the worms strip the leaves, (nothing appears to trouble jute,) so much the less labor in handling. Be not afraid of overflow. I have seen specimens looking well that I set in a pond of water, a foot deep, three weeks ago. Hundreds of roots have put out between the bottom of the pond and the surface of the water. At the same time and place I put coffee weed and cockle burr in the water. The burr died in six days. Coffee looks a little sick; jute prime.

I must try and induce some of my rice planting friends in old South Carolina to

*This sentence puzzles us. Our correspondent must have jute of a different variety from any that we have seen. We have grown jute for two years, from seed originally received from the Department of Agriculture. There were two varieties, one with a green, and the other with a redish stalk. On both the *capsules* or seed vessels are long, cylindrical, fluted pods, something like miniature okra.—ED.

try jute next season. I should recommend low down, on either of the rivers, where the coffee weeds grow most luxuriantly.

I would suggest, when the jute was cut, lay it in a compact body, (in rows,) and flow the field so as to cover the cut plants. But these plants would float if not secured down. Small stakes may be used, (such as are used as task-stakes,) put slanting, one on each side of the row of lying jute, five, six, or eight feet apart, as the planter may find necessary. The labor of getting these stakes and placing them over the jute may appear very considerable, but I think it would be a trifle in comparison with labor of binding in bundles, hauling to a vat or pond, and then dragging from vat or pond after eight or ten days. Stake down, flow the field, dry when necessary, by drawing the water, and spreading to the sun and air, and then collect your fibre. May not some of our Sea Island cotton planters, having reclaimed marsh land under the influence of the tide, try jute also? Flowing up with salt water, as proposed above, may answer as well as fresh or brackish water.

We shall want seed by the 10th of March next. Will the United States Government assist us by importing seed, and sell to the planters? Some of the packages which I received were marked "from France," some "from Calcutta." That from France was much cleaner and better prepared than the other. It is advisable in planting to dampen the small dark seed, and whiten it with fine lime plaster or wheat flour. Plaster I think best. F. W. JOHNSTONE.

Orleans Parish, September 13th, 1872.

Guano on White and Red Lands.

The fact cannot be disguised, that Peruvian Guano, and all of its class does not act as well on white or sandy lands as on red or clay lands. True it first obtained its reputation, as a cotton fertilizer, in the hands of Mr. Dickson, of Hancock County, on this very class of lands, but he soon found it necessary to modify with salt, plaster and dissolved bones, to prevent the excessive stimulus of the pure guano. But of late years, with all the modifications made, there is a much more general complaint from planters on sandy soils, than on clay soils. In Southwestern, Southeastern and some portions of Middle Georgia, the complaint comes up almost every year, that the guano has failed, in whole or part, to come up to the expectation of the planter; while, throughout the clay regions and on the more northernly line of the cotton belt, guano is growing in favor and coming more in use every year.

At first it was supposed, from the fact that potash was generally deficient in sandy soils, this was the great requisite for this class of lands. As this salt could not be used with ammoniated preparations without loss, Mr. Dickson consulted the chemists and had a preparation made of potash and plaster. It utterly failed to pay, however, and was soon abandoned. Then the German potash came into vogue, a salt not incompatible with ammonia, and was used extensively in more than one com-

pound. This was, if anything, a greater failure than the other, as whole plantations, where it was used, rusted out so completely, as to leave the inference that muriatic acid of the potash and common salt being set free in the soil acted as a corrosive poison to the roots of the plants, and thus destroyed their vitality.

In my opinion the whole difficulty exists in the soil itself, its deficiency in the capacity to retain moisture, to obstruct the rays of the sun and modify its heat, in consequence of an insufficient amount of vegetable matter in the soil. The following facts have been clearly established: That even on white lands where the soil has not been too much exhausted of humus, with plenty of rain, guano acts as well as on red lands. That where the rains are excessive, especially in the spring, the soluble ammonia and phosphoric acid, seem to leach out, and a failure is the result. That where there is too little rain, especially in fruiting season, it is attacked by rust and the plant actually dies prematurely. This, however, is true in many localities, where no guano is used, but generally the disease comes on earlier where there has been stimulating guanos used.

Why then does not guano act as well on white as on red lands, during excessive rains or excessive drought? In the former case, as indicated above, the soluble matters are filtered away, because there is not sufficient clay in the soil to seize hold of the ammonia and phosphoric acid and keep them from leaching away. Clay is a great absorbent of both of these principles, as well as of water, while silica holds neither of them, but admits their passage through such a soil, as by an open door-way. Hence the soluble matters are first taken up by the water and held in solution until an over quantity comes and it filters through the soil as through a seive. It takes a clay soil however a long time to become thoroughly saturated, and even then the water, instead of percolating through its impervious subsoil, rather leaches by being washed over its surface.

The sandy land is equally unfortunate in reference to the reception of caloric. The very color of the soil adds to the burning intensity of the sun, causing a double heat by reflection on the cotton plants and superincumbent air, while its direct rays penetrate deeper and heat the soil already relieved of its moisture to many inches below the surface. The guano itself becomes dry and heating and a collapse ensues from the stimulus afforded by it to the plant, and premature decay comes on and death ensues. A clay soil is possessed of much more compactness and impermiability, retains its moisture and coolness to a much longer period, its very color aiding to protect the plant from reflective heat, and thus rust rarely ever results except in land exhausted of humus.

What is the remedy? I have been asked if a fertilizer could not be prepared to obviate these difficulties on white lands. I think not. One might be prepared with properties less stimulating, but it would hardly compensate for the loss of ammonia and phosphoric acid. It would soon grow into disrepute from its inertness. The only remedy I can suggest is such a rotation of crops as will largely increase the humus in the soil, and change its color from white to black. This can be done gradually by sowing small grain manured with cotton seed one year, rest one year, and planting cotton two years, with a good nitro-phosphate of high grade,

but applied in not over-large quantities, per acre, say, from 100 to 150 pounds. I think by this process our white lands could be gradually supplied with humus which would retain and hold the moisture of the soil, obstruct the rays of the sun, prevent reflection, and increase fourfold the production and value of our white lands.

E. M. PENDLETON.

Sparta, Ga., September, 1872.

Notes by a Florida Planter.

Experience with Cotton in Check Rows.

In 1870, I put in a small crop of cotton in check rows. My tenants drilled. I hoed twice; they, five times; and my cotton was nearly as heavy a yield as theirs. I made more money on it, their profits having been partly spent in hoeing. Some years ago, I demonstrated the same thing in regard to corn. I could raise a larger crop by drilling, but the cost per bushel was heavier. Hoeing is a heavy item of expense, say $3.75 an acre, equal to a fair rental of the land. By check-rowing and the use of the cotton scraper and small harrow, this item may be reduced to about one dollar and twenty-five cents. The chief difficulty lies in putting in the crop, the ploughmen being unskilful in marking off. But a good planter will soon teach two hands to run a straight furrow by sighting to poles; one to mark off, the other to split. After the stand is secured, the advantage is all on the side of the check-rows; the planter does his work with his regular force, the scraper, harrow and cultivator taking the place of occasional hoe-hands. His crops need not run to grass in the rainy season and he can foresee how much he can tend. His only possible trouble for help is in the picking season. We shall have to come to this: regular hands hired by the year, more work done by machinery, less hoeing and main strength, and more rotation of crops and green manuring. Drilling cotton was right under the old system of labor, employing weak hands otherwise idle; it is wrong under the present system, which makes each hand an additional expense.

Barley as Feed for Horses—Forage.

Barley is a better horse feed than oats, and a surer crop. I have raised it successfully three successive seasons. This year, in my heaviest work, I fed it in the straw, dampening at night enough for next day's feed and putting on a little grist at feeding time; sometimes, I increased the grist, and *vice versa*. My animals kept in good heart and good order. Barley requires a good soil. It is not much cultivated here, but ought to be recommended as a regular crop. In California, it is used for horse-feed more than corn and oats.

My Egyptian millet hardly paid for itself this year, but was good the two previous years. Cow peas planted early in April yielded a fair crop of forage in July, early enough for a second crop raised for peas. I planted about two acres in forage corn, cut it in tassel, cured it in shock and put it in the barn as soon as cured. The yield was very heavy. I topped all my corn as soon as the grain was out of

the milk. With millet, pea-vine, corn tops, forage corn, barley, and oat straw, I shall have plenty of long forage. I expect, however, to get in a supply of crab and crow-foot grass hay. Next year, I hope to try your plan of preparing for a good crop of hay.

The Labor Question.

My experience of laborers here is favorable. I prefer them greatly to such as I had to employ in Illinois; they are more punctual, lose less time, are more easily satisfied as to rations and lodging, have fewer troublesome notions, obey orders better and do more work. My plan is to pay fair wages promptly; to keep very short accounts and make them understood; to give no credit, but never let a man ask me twice for a settlement or for money due him; have plain rules strictly adhered to and systematic work, full rations of good food, occasional presents and liberality as to melons, fruit and garden vegetables. This, with civil treatment and kindness in sickness and other afflictions, has procured me good hands and plenty of them. I tried the "cropping" system, but could not make it go. My animals were damaged and the crops were not well worked. I gave it up as a bad business arrangement.

Red Ants—A Remedy Wanted.

These are a nuisance in housekeeping. What shall I do to get rid of them? A full answer will oblige hundreds of your readers. Costar's Exterminator will not rout the red ants, though it is effective againt cockroaches. My present house was full of cockroaches when I bought it, but three boxes of Costar destroyed all of them; but the little ants care nothing for Costar or any thing else I have tried.

Waldo, Fla. B.

Indian Foods and New Subjects for Experimental Cultivation.

Many of our most esteemed vegetables and fruits are of very lowly origin, and to the casual observer must have presented few indications of the capabilities for improvement which they have been shown to have possessed. The austere wild crab apple of Europe gave little promise of the magnificent Belleflower, and the wild celery of the English marshes and ditches—a rank, coarse weed—hardly seems to contain within it such possibilities as Seymour's Superb and Crimson Solid, as we find them in our gardens to-day; but the history of Agriculture and Horticulture abounds in records of even more astonishing transformations. Man has a wonderful power, the limits of which are unreached and unknown, over the lower kingdoms of nature. We are constantly invited to new conquests for the increase of our stores of necessaries and luxuries; and some recent inquiries in regard to the foods of the Indians of the far West have brought to light many very promising subjects for the exercise of our skill, and even a few which seem already to have been prepared by the hand of nature for immediate use, but which will, doubtless, also be improved by cultivation.

The Report of the Department of Agriculture for 1870 contains a very full list of the foods in use by the Indians of the great plains and mountains of the West. We

describe and illustrate a few of them, to which, it seems to us, special attention should be called:

Fig. 1.

Kamass Root (*Camassia esculenta.*)—This root resembles an onion in shape and a hickory nut in size. It bears a pretty blue flower, and grows on rocky hills. The root is dug in June and July. When eaten raw the taste is pleasant, mucilaginous; when boiled it somewhat resembles that of the common potato. The Indian mode of preparing it for future use is to dig a pit, line it with rocks, upon which a fire is made, and, when heated sufficiently, the heated stones are swept clean and the roots are heaped upon them; grass or twigs are next laid over the pile, and, finally, a covering of earth. After several days the pit is uncovered, when the white roots are found to be converted into a thoroughly cooked, dark-brown, homogeneous mass, of about the consistency of softened glue, and as sweet as molasses. Cooked in this manner, the roots are often made into large cakes, by mashing and pressing them together, and, when slightly dried in the sun, they become rather pliable and tough, and look like plugs of black navy tobacco. Its color does not recommend it to the taste, but it is sweet, mucilaginous, and as agreeable as the fresh root, excepting a slight smoky flavor acquired in baking. In this pressed form it keeps softer than in the raw state or when simply cooked, and may be kept for a year or more. The roots, when boiled in water, yield a very good molasses, which is much prized, and is used on important festival occasions by various tribes. The Indians of Cape Flattery, the Nez Perces of Idaho, and those of Pitt River, California, are the greatest consumers of this article of diet, under the name of kamass root.

Fig. 2.

Kouse Root (*Peucedanum Ambiguum.*)—The root of this plant is dug in April or May, when in bloom. It grows on hills and mountains which are so poor that grass will not grow upon them. When fresh it is like the parsnip in taste, and as it dies becomes brittle and very white, with an agreeable tast of mild celery. It is easily reduced to flour. When its brown epidermis is removed, innumerable small dots are revealed. Both the roots and the flour will keep several months. It is sometimes called bread or biscuit root by travelers, and Kouse root by the Indians of Oregon and Idaho. The Canadians know it by the name of *Racine Blanc.* After the bread has been made a short time, its taste is not unlike that of stale biscuits. When the roots have been pounded fine, the flour is pressed into flat cakes, one foot wide, three feet long, and from a quarter to half an inch thick, of an oblong rectangular form,

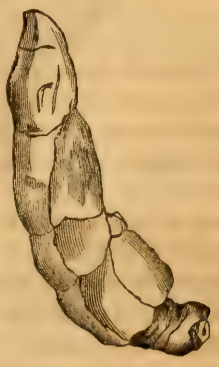


Fig. 3.

with a hole in the middle by which they are fastened on the saddles when traveling. The cakes have a ribbed appearance, caused by being laid on sticks stretched over the tent fires, for the purpose of smoke-drying or baking the bread. When broken up the bread has a coarse granulated appearance, especially when not ground very fine, and is very insipid.

Fig. 4.

Prairie Potato (*Psoralea Esculenta.*)—It is also called Indian turnip, *pomme de prairie* of the French, and tip-sin-nah of the Sioux, who use this root very extensively. It is generally the size of a hen's egg, of a regular ovoid shape, with a thick, leathery envelope, easily separated from its smooth internal parts, which become friable when dry, and are readily pulverized, affording a light, starchy flour. It is of a sweetish turnip-like taste, is often cut in thin slices and dried for winter use, and is very palatable, however prepared. The Indians of Kansas and Nebraska consider this root an especial luxury. The Indians of the St. Croix River offer these roots as a peace offering to the Great Spirit.

Wild Sago (*Calochortus Luteus.*)—The Utahs call it sago. The root is the size of a walnut, very palatable and nutritious. The Indian children of California, Utah, and Arizona, prize it as the children of the whites do confectionery, and no doubt it is far more wholesome than the candy of our shops. The Mormons, during their first years in Utah, consumed this root extensively.

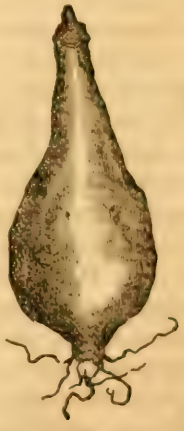


Fig. 5.

The Department of Agriculture is no doubt experimenting with these and other comparatively unknown food products and will give the country the results in due time, but this should not prevent individual enterprise from taking hold of the same work.

In view of the blind reliance which too many readers place in the teachings of mere pretenders, we must caution such as are not competent, by thought and experience, of judging for themselves of the worthiness of such cheap advice, to first consult some good, practical, reliable person before swallowing any theory as gospel truth. There is no art, science or practice which requires a nicer discrimination between cause and effect, and a more sterling common sense than farming.

A Plea for Agricultural Papers.

It is a fact, the truth of which is to be regretted, that the proportion of farmers who are in the habit of taking regularly some agricultural paper, is so small in comparison with the whole number. This in some cases is the effect of a prejudice against what is termed "book farming," in others, of an imaginary inability for want of means.

It is hardly to be supposed, that if any person could have an offer of making an investment, which would pay from one hundred to five hundred fold, that they would refuse to try one or two dollars at least, and yet, with all the advantages gained, and benefits derived from agricultural papers, as declared by those who have been benefitted, the circulation of such publications is not one hundreth part what it should be.

It is recorded that a farmer, having the means, subscribed for twenty copies of an agricultural paper for that number of his neighbors, with the understanding that if dissatisfied at the end of the year the same should be stopped; but while some received them with a determination not to read the same, the children and other members of the family did so, and made the matter a subject of conversation, whereby the farmer soon found the paper a beneficial visitor, and all were continued. As a result, a very short time exhibited a marked improvement in agricultural operations in that neighborhood, an increase of crops, the introduction of improved implements, etc.; but the most marked effect was in the sale of his farm, by the person who donated the first year's subscription, whereby he realized two thousand dollars more than he could have done a few years before, and previous to the introduction of agricultural reading.

This is not a solitary case, although it must be acknowledged to be a very prominent one. How often do we read of the confession of some farmer who from the reading of some small item has realized to himself, or saved an amount many fold greater than the whole year's subscription to the paper in which it was found. If all farmers could be made to understand this as they should, the accession to subscription lists would be immense, and then in the same proportion as this occurs the publication could be improved in size and value.

The plea of poverty is hardly tenable in any case, since there is scarcely a man who is the owner of any land, it makes little difference how little, but that in some way, unintentionally though it may be, wastes enough in the course of the year to pay for several subscriptions, and still you approach that man with the request to try the paper for just a year, and you will be met with the rebuff, "oh! I can't afford it, I have all that I can do to live and make the year come round," and still this same man, from the small amount of poultry that he keeps, wastes manure of more value than the price asked for the paper. Now this class of individuals must be reached. The interests of the noble cause of agriculture demand it. The general prosperity of the States and nation, which depend upon agricultural advancement, requires it. And to the end of accomplishing this noble purpose, let all the lovers

of improvement bend their energies, and exercise their abilities, in attempting to persuade such as are not already provided, to take the agricultural paper, and so be elevated on the scale of farming intelligence, whereby they will become better citizens, and will add very much to their material prosperity.

Columbia, Conn., September 4, 1872. WILLIAM H. YEOMANS.

Light Wanted in Egypt—Algerian Wheat—The Bamboo.

Under date of May, 9th, 1872, General Charles P. Stone, recently of the United States, now a general in the army of Egypt and chief of staff of His Highness the Khedive, writes to the Department of Agriculture that, on account of the scarcity of labor, good practical labor-saving agricultural implements are much wanted and the Department is desired to furnish sketches of such as are simple and strong and do not require much skilled labor to manage and repair them.

General Stone further says, that hints on cotton, rice, sugar, and tobacco culture, as practised in the Southern parts of the United States, are eagerly seized upon by the Egyptian planters.

An Algerian wheat is mentioned as proving, after eight years of trial in Egypt, as most valuable for that climate, and General Stone suggests that it may be also well suited to the extreme South of the United States. He will send a parcel of the seed to the Department for distribution in the South. In Egypt it is sown in December and harvested in May, and stands very successfully the climate of Egypt, in latitude 30°, where it rarely receives rain, and is grown by irrigation.

General Stone has sent to the Department a pamphlet on the Indian bamboo, which is being acclimatized in Egypt with great success. The pamphlet was recently published at Cairo, under the patronage of the Khedive, by the Agricultural Department of Egypt. We append a few notes from it which we find quoted in the Monthly Report of the Department for July, 1872:

The gigantic bamboo, which is of colossal dimensions, growing to the height of 20 meters, with a circumference of 40 to 50 centimeters at the base, (say 65 high and 15 to 18 inches in circumference,) from the joints of which, especially those of the middle and upper parts, grow numerous branches with long leaves, is the most vigorous species of this arborescent plant. It was introduced some years ago into the gardens of the Khedive of Egypt, at Ghezireh, from whence it has been multiplied in two or three other gardens of Egypt. It was so much admired by the Emperor of Brazil, on his visit to the gardens of the Khedive last autumn, that he expressed his determination to import it into Brazil, and to cultivate it upon the imperial estates as a shade for animals during the heats of summer.

The gigantic bamboo originates in India and China, and is highly appreciated wherever it is cultivated, being used for posts in pavilions and the houses of the inhabitants. The hollow joints are utilized for carrying liquids, for flower-vases, &c.; and in China, and especially in India, for bottles and tobacco boxes, highly wrought and polished, and sold at great prices. The larger stalks are also used for bridges, water pipes, and carts and other vehicles. In fine, the wood is employed in the arts, in a multitude of industries, and for implements of agriculture.

This species of bamboo vegetates with such rapidity that it can almost be said that one can see it grow. Its progress may be seen from day to day, and at Ghezireh

it has been known to grow 9 inches in a single night. In China, criminals condemned to death are subjected to the atrocious punishment of impalement, by means of the bamboo. A humid soil is congenial to the gigantic bamboo, although it suffers under a prolonged inundation. It is proposed in Egypt to cultivate it upon the borders of the canals in the vast domains of the Khedive.

There is also in the gardens of Egypt another species of bamboo, believed to be the *Bambusa arundinacea* of Wildenow. It presents the following characteristics: The stalks are smaller and shorter than the gigantic bamboo of India; it attains about 12 meters (39 feet) in height; it forms larger tufts or clusters than the great bamboo, and throws out a greater number of stalks, which are furnished with numerous slender and flexuous branches, bearing ordinarily tolerably large thorns, a little arched at the joints or articulations, and the leaves are smaller than those of the gigantic species, being rounded at the base, lance-shaped, tapering to a point, and a little downy.

There is another species of bamboo which it is proposed to cultivate in Egypt. It attains a height of 5 or 6 meters, produces enormous clusters of canes, about the size of the finger, and makes excellent props for use in horticulture. A plant of two or three years' growth will furnish a hundred stalks, forming a cluster of vast size. This species is the *Bambusa edulis*, so called from the fact that its young shoots are edible, and in China regarded as very nourishing.

There is still another species of bamboo to which the attention of the cultivators in Egypt is called. It is the black bamboo, (*Bambusa nigra.*) It is distinguished principally by its slender branches, which are of a fine black color, and from which canes are manufactured extensively for exportation. Pens are made from the smaller stems, which are commonly used for writing in Egypt.

The bamboo succeeds in Florida. How much further North it might be acclimatized should be determined by experiment.

Timely Farm and Plantation Topics.

Plaster, Clover and Wheat.

Plaster is a capital application on the clover field, and clover is a great enricher of the land, but chemistry and practical experience agree in teaching that the best clover sod is not necessarily a suitable soil for wheat. Good wheat land, properly prepared, will generally produce a fine crop of clover, but good clover land does not necessarily give a good wheat crop. Clover enriched land makes *soft* wheat, and soft wheat will not make good bread. Here is a table of the ash constituents of clover and of wheat, by which it may be seen, at a glance, that the clover plant cannot supply all the mineral matter carried off by the wheat. If the deficient minerals be already in the soil, in sufficient quantity, there will, of course, be no failure on that ground:

	Red Clover.	*Wheat Grain.*	*Wheat Straw.*
Potash	16.10	29.97	12.14
Soda	40.71	3.90	0.60
Magnesia	8.28	12.30	2.74
Lime	20.91	3.40	6.23
Phosphoric acid	4.12	46.00	5.43
Sulphuric acid	1.06	0.33	3.88
Silica	2.60	3.35	67.88
Peroxide of iron	0.46	0.79	0.74
Chloride of Sodium	5.80	0.09	0.22
	100.04	100.03	99.86

The Different Kinds of Gypsum, and Where they Come From.

Dr. Daniel Lee says that Onondago Gypsum (plaster) is the purest known, and that its beds have been worked for sixty years, from sixty to eighty thousand tons per annum being used in agriculture. He gives the following figures as to the purity of the various kinds of gypsum:

Onondago, New York	94.23
Plaster of Paris, France	89.16
Nova Scotia	85.36
Fort Dodge, Iowa	70.80
Cayuga, New York	71.75
Virginia	62.42
Herkimer County, New York	75.68
Gypseous Slate, New York	37.46

The Phosphate Rocks of South Carolina.

We seldom estimate, at their true value, our own home resources. Native plants of the greatest use or beauty are passed by without notice, while less important or less attractive ones, if brought from China or Japan, are sought after and cultivated with the utmost interest. It is the same with our mineral products. Our immense deposits of phosphate rocks and marl, though talked about and, in the case of the latter, somewhat largely mined and manufactured, are not half appreciated, and, in spite of their great value, as demonstrated by chemistry and experience alike, are rejected by thousands of our planters in favor of inferior fertilizers from abroad—"far brought and dear bought."

The New Southern Staple.

We know not what unforeseen obstacles may present themselves in the way of jute culture in the South, but at present, it promises, at no distant day, to become a large interest and a source of vast income to some portions of our country. We do not think our upland cotton lands will be found at all suited to it; but on our Sea Islands, on the rice fields of the low country, and on the bottom lands of the middle country, immense crops of it can undoubtedly be grown with comparatively little cultivation. See, in this connection, "Ramie and Jute in Louisiana," in the present number.

Manuring Leachy Soils.

What leachy soils most want is clay, but except in a small way, as on a garden, it is seldom practicable to apply it. Lime, plaster and ashes are always beneficial, we believe, on such soils. All manures should be applied to them on the surface, and but slightly covered. The fertilizing elements will find their way fast enough to the deeper strata of the soil. Frequent light applications are also better than occasional heavy ones. Top dressings, made during the growth of the crops, are particularly beneficial on such soils.

We hazard the assertion that no class of equal average means live so well as American farmers. One of these, possessing a farm and buildings worth ten thousand dollars, will gather about him and enjoy more real comfort than could be obtained from the income of a hundred thousand dollars in New York.

Gleanings from Many Fields.

War as a Benefactor.—Our late civil war was the means of scattering the seeds of the various grasses far and wide through the South in the tracks of the armies, helping especially to disseminate the Japan clover (*Lespedeza striata.*) The Franco-German war has acccomplished still greater things in France. In a communication lately made to the Paris Academy, M. Vibraye states the fact of certain exotic forage plants having appeared in considerable numbers in the central parts of France, after the stay of the army in these localities. He gives the following account of these plants:

Their appearance, no doubt, results from forage supplied from abroad, the seeds which had fallen into the ground. At the present time several Mediterranean plants, (chiefly Algerian), having braved the cold of an exceptionally severe winter, are being largely propogated, forming extensive meadows, and changing soil that was formerly arid, and produced no vegetation of importance, to veritable oases. This may probably lead to the definite introduction of a large number of plants into a more northern region than that which they appear naturally to occupy and to prefer.

Accidental Success in Farming.—Mr. Wm. E. Freeman, in *Our Home Journal,* cites the following instance of the accidental success of slip-shod, unscientific farming:

A farmer, residing a few miles from me, said to be one among the best practical planters of the State, in 1870, was experimenting with commercial fertilizers, reading the *Southern Cultivator* and putting in practice Mr. David Dickson's theory of cotton cultivation.

The latter part of August I passed his residence. I called and made inquiry as to his success; his crop did well until about the middle of July, when his cotton wilted, dried up, shed its leaves, forms, etc.

Another farmer, on an adjoining farm, one I suppose of the "slip-shod," "knock-down-and-drag-out" kind, had barred off, running deep, thrown back the earth to the cotton, running deep every way; I guess he was compelled to run deep in order to get under the grass; but his crop at that time was green to the ground, fresh, nice and growing. I remarked to the former gentleman, that it was simply *the result of accident,* and by no means the skill of the latter gentleman in the cultivation; he smiled and replied: "I fear Mr. Dickson is a better financier than he is a farmer."

Even accidents may teach us something. The wise planter will not disregard the most insignificant facts bearing upon the cultivation of his crops.

South Carolina Phosphates.—"Ten years ago," Dr. J. R. Nichols says, "who could have supposed that along the river beds upon the coast of South Carolina there were millions of tons of rocks holding that important element of plant food, phosphoric acid? These rocks were indeed known but their important character was not understood." He adds:

The phosphoric rock beds of that region extend over an area of several hundred square miles, and the beds are in places twelve feet thick. It is estimated that from five hundred to a thousand tons underlie each acre. How vast is this supply of an agent

of the highest importance to agriculture, and what a source of national wealth is open to us. At the present time, there is great activity in the work of grinding these phosphatic rocks, and, with the aid of acid, preparing the superphosphate of lime for agricultural uses.

Australian Trees in Texas.—A correspondent of the Department of Agriculture writing from Galveston, Texas, reports favorably in relation to the Eucalyptus and other Australian trees in that vicinity. He says:

The Eucalyptus or gum-tree has grown in six months, from January 17 to July 17, to the height of 33 inches. Other varieties of the Eucalyptus, in the same time, have grown from 12 to 22 inches. The Casuarina or beef-wood tree—the native oak of Australia—has grown about 24 inches. I divided the seeds with others, and have received from them reports of success fully equal to mine. The Eucalyptus is certainly the most rapid-growing tree I have ever seen.

We have several species of the Eucalyptus now growing here in Charleston and promising to make very beautiful trees, should they prove hardy in our climate.

Parsley for Sheep.—A correspondent of the *Toronto Globe*, in laying down his land in clover, always sows parsley with it. He says:

It is the best food for sheep there is, keeps them healthy, and fattens them with wonderful rapidity. Of course I don't sow enough to smother the grass; but I take care there is some all through it, and the sheep will find it out, and never leave a bit of it if they can help it. The cows and cattle are also very fond of it, but it is the fittest for sheep, as it does them the most good. The only thing to be guarded against is to keep the breeding ewes from getting too much. They fatten so fast that it stops their breeding, which is, of course, a loss. But I am careful to keep the breeding ewes off it as much as I can.

This is, to us, a new idea, and it may be of practical value, as parsley grows finely in our climate during the winter and spring.

Who Gets the Money?—Professor Chandler lately tested five hundred samples of the milk, sold by the middle men to consumers, and found four hundred and seventy diluted and adulterated with something to make the compound look like genuine milk. For their vile stuff, an advance of nine million dollars on the first cost of pure milk was realized last year; recent investigations into the milk business of New York showing that while consumers pay twelve million dollars a year for milk, the producers get only one-fourth of the money. These facts suggest the importance of farmers dealing, so far as possible, directly with the people who consume the products of their land and labor. The denizens of the city are even more interested in this matter than the cultivators of the soil.

Jute in Georgia.—A correspondent at Augusta, Georgia, represents the jute plant as having done well this season in that locality, and that he hopes to raise enough seed to test its adaptation to that climate. Another at New Orleans, Louisiana, states that the jute-plant succeeds well, and that the ramie-cleaning machine is well adapted to the preparation of jute. It is a pity that the machine should fail to do properly its own specific work. Jute is a perfect success here, so far as the growth of the plant is concerned.

Horticulture and Rural Adornment.

Horticultural Hints for November.

It is one of the great advantages of our long—we might say uninterrupted—growing season, that if any of the operations, properly set down for any particular month, have been unavoidedly neglected, they can, in many cases, be transferred to the next without very serious detriment. There is always a best time to do a thing, of course, but we need not and should not excuse ourselves from doing it, because we could not accomplish it at that best time. It is well, therefore, at the beginning of each month, to take a general review of the preceding one, and make its neglected work, so for as it may still be practicable, the first thing in order. It may be well to remark, moreover, (though the fact is, perhaps, obvious enough,) that nothing like a fixed calendar of garden or farm work can be perfectly adapted to so wide a range of latitude and longitude as that for which we write. Our dates must be considered movable, and may be carried backward or forward, accordingly as the reader's latitude may be north or south of ours. From five days to a week for each degree of latitude may be taken as a general rule in measuring climatic differences, but to this there will be many exceptions, depending upon the distance from the ocean, altitude, the physical conformation of the country, and the character of the soil. In the same latitude, too, the time for performing many horticultural operations will vary considerably, with the varying seasons. Consulted with all these modifying circumstances in view, we may venture to hope that our brief hints may be of service to novices, at least.

———If disposed to take considerable risk from frost, we may plant our first crop of peas from the tenth to the fifteenth of this month in the latitude of Charleston and southward. Eugenia, Laxton's Prolific, or some other medium grower will be most likely to give us a crop. The smaller dwarfs, like Tom Thumb and McLean's Little Gem, will come into blossom too soon, and be more likely to be cut off. Toward the end of the month, or the first week in December, we may plant the quick growing dwarfs, of which the Little Gem is the best. We select, if possible, for our peas, ground that is rich from previous manuring, so as to require little if any additional application. Manuring at the time of planting, gives too rank a growth of vine, with proportionally less pods. Peas should be planted thicker than is customary with most persons. We plant in double rows, setting sticks between them. The rows may be two feet apart for the dwarfest kinds and from three to four for the larger growing varieties.

———Turnips may be planted during the present month, but with some risk, as in the case of peas. They are liable to be killed, while young and tender, by the hard freezes which often occur in December and January, but if they should live through, they will come into use in good time in the spring, and be very tender and sweet. A slight covering of straw, leaves or dry grass, strewn over them, will

often save the crop. Similar remarks apply with equal force to Carrots and Beets. Lettuce and Radishes are somewhat more hardy, but often need slight protection, even in this latitude.

———The Cabbages and Turnips planted in September or October, will require frequent attention. There may be few weeds, but the soil will need stirring with the pronged hoe to keep it light and friable. If cabbage plants of a suitable size can be obtained, they may be set out during the month, for the earliest spring crop, and seeds may be sown for later plantings. The young plants will need some protection during the winter. A cold-frame, as described in February number of Vol. I, (page 287,) is a very useful garden fixture for this and other purposes.

———The English or Broad Bean, though not a general favorite in this country, is well worthy of cultivation on account of its hardiness and earliness. Though hard freezes sometimes kill the tops, it seldom fails to put out new shoots and make a crop. It is well to make successive plantings during the fall and winter. Early Mazagan and Broad Windsor are desirable varieties.

———Onion sets are still in order for planting, as is Spinach, Mustard and Cress; and Celery, Endive, Artichokes and Asparagus, will demand attention, as indicated in our last number. The clearing up, manuring and spading, insisted upon last month, if not already accomplished, should no longer be delayed. Turning up the ground now will destroy many injurious insects, as well as greatly benefit the soil.

———This is the best month in the year for planting fruit trees, though the work can be successfully done any time during the winter, in this climate. Whenever it may be done, let it be on thoroughly prepared ground, and the work be faithfully and carefully performed. Now is also a good time to plant raspberries and strawberries, not forgetting what has heretofore been said of the best varieties.

———In the flower garden, if the directions given last month have been strictly carried out, little will be left to do, except to dig over beds and borders, prune, plant and transplant hardy shrubs and vines, and keep the walks clean and tidy, but most of the work of last month, if neglected, may, in this latitude, still be done with success.

The Cucumber Barrel Again.

Sometimes it is very difficult to get stated in print what one wishes to explain about such matters as the above, and it is just about as seldom that novices in gardening will do precisely what they should.

It is often very desirable to have a few hills of vegetables that can be depended upon, even in the hottest, driest, summer weather, and the conditions are as follows, or something entirely equivalent:

Have as much *good* manure as you wish, covered six or eight inches deep with dirt (to please some of the splenetics we will write soil) heaped like a potato bank.

On the top of this put a keg without heads, a pot or can with the bottom out, or any other otherwise water tight vessel, but that will let the water soak *slowly* down through the manure to the plants at the *bottom*, and the desired vegetables are sure. No one who hasn't easy facility to water, and a good share of the patience of Job, need try this; as the manure must be kept moist all the time. A little mortar should be made of the soil inside, so that the water will not gutter down too rapidly. M. L. B.

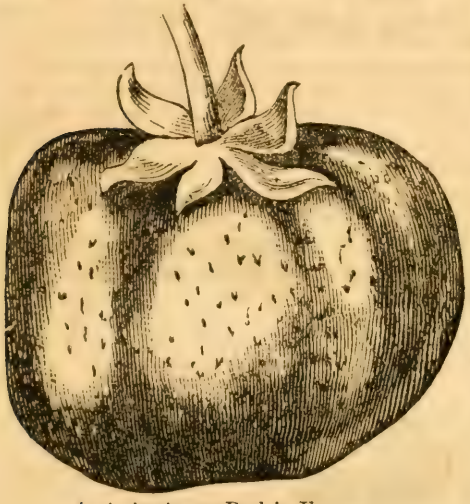
Orangeburg, S. C.

Strawberries, New and Old.

Russell's Prolific Strawberry.

We are repeatedly asked which are the best strawberries for the South, and we have several times answered the question in the RURAL CAROLINIAN, so far as such a question can be answered. "The South" is a somewhat indefinite term, and, taken even in its narrowest limitation, embraces a wide range of climate and every kind

of soil. A variety that may be classed as *best* in Charleston and vicinity, may be worthless in the central or northern part of the State, or in Georgia or Alabama, to say nothing of Tennessee and Virginia. A list to be recommended for any wide extent of country must be a very brief one. When we have mentioned Wilson's Albany—not first rate, or even second rate in quality—and Longworth's Prolific, which is better, but not quite so productive, we hesitate to name another, for the South, generally, and even these may fail in some localities. Triomph de Gand succeeds very generally on a good, strong soil and with high culture, and it has few equals in beauty and flavor. It is one of the best for home use, or for market.



Agriculturist, or Peake's Emperor.

A correspondent inquires what we think of Peake's Emperor, Napoleon III., and Russell's Prolific. The first, we believe, is identical with the Agriculturist, which has proved a failure generally in the South. Napoleon III. is a magnificent berry where it succeeds, but it requires a cool, moist soil, and is entirely unsuited to our climate. Russell's Prolific, though not doing very well with us, has succeeded admirably in some localities in the South. It is productive and of good flavor It is, however, pistillate, and must be grown alongside of a fertile sort to insure impregnation.

How to Construct a Cheap Greenhouse.

In reply to a correspondent, Mr. Berckmans, in the *Farmer and Gardener*, gives the following directions, which may be of service to many of our readers:

A good greenhouse, suitable to an amateur horticulturist, can be constructed at far less expense than is generally thought. The few greenhouses that we find at rare intervals are, as a rule, constructed at considerable expense as compared to their size, and unfit to grow plants in.

We will suppose that our correspondent needs but a small house, say 25 by 12 feet. Our plan for a building of this size would be to sink the floor two to three feet below the level of the soil; this has many advantages over houses built entirely out of the ground. The foundation walls should be made of brick, or, where material is at hand, of concrete. If the latter is used, dig a trench one foot wide to the required depth; line the inside with rough boards, and fill up with stones, gravel and mortar. The soil of the inside can be dug out afterwards, and this will give a solid and economical foundation. The roof should be what is termed *span-roof*. We object to *lean-to* or single pitch houses. Plants will require more attention in the latter, and must frequently be turned to prevent growing one-sided. The light is equally distributed in a span-roof house, and obviates this drawback.

The roof should be formed of portable sashes seven feet long by three or three-and-a-half feet wide. Every alternate sash is screwed fast to the sill and ridge pole. The others are movable, and elevated by an iron bar attached to the sash by a staple. The bar can be hooked upon an iron pin in the ridge-pole when the sash is open for ventilation. The interior arrangements of the house consist of a table of four feet wide on each side, leaving a walk in the middle. The ends of the house to be of inch plank. A common brick flue running on one side of the house will answer for all the necessary heating apparatus—the flue to be of bricks placed edge upon edge. When bottom heat is required to propagate plants or for other purposes, it is advisable to board up the side of the table under which the flue runs, one board to be hinged so low as to throw the heat all over the house if needed.

The tables are to be covered with an inch of sand, upon which the pots are placed, and in a house of this description nearly all classes of plants can be grown. We do not advise, however, to keep the temperature at a high degree, especially if a miscellaneous collection of plants are placed in the house, as it would not suit hard wooded and half-hardy plants to be forced in vegetation early in the winter, but advise that fire will only be made to keep the thermometer from getting too low in extreme cold weather. A simple covering of gunny bagging rolled on the outside of the glass during the night will, in ordinary weather, be sufficient to keep the temperature at the desirable degree without fire heat.

The cost of such a house need not be over $150, if constructed in a plain but substantial manner—where the work is partly performed by the amateur, a lesser sum will cover the cost of construction.

Seasonable Orchard and Garden Notes.

Two Ways of Planting a Tree.

First Way.—Have the tree dug up by an awkward negro, with a dull spade. No particular directions need be given in regard to sparing the roots, or to the condition of the few severely shortened ones which may come up with the tree. Roots are of little consequence in this mode of planting. Next dig a small, deep hole, as for a post, and crowd the mutilated stump into it as deeply as you can; fill in the earth, ram it down well and the work is done. You can plant another tree in the same hole next year, which is a great advantage.

Second Way.—Have the entire ground to be planted well prepared by deep spading or subsoiling, enriching it with suitable manures if necessary. Dig a shallow hole simply deep enough and wide enough to take in all the roots without twisting or cramping them. Have the tree properly taken up; prune off, with a sloping cut from the under side upward, all broken or bruised roots; set the tree perpendicularly into the hole, in the same position in respect to the points of the compass and at about the same depth at which it grew in the nursery; fill in the earth carefully, shaking the tree slightly to make the soil fill all the crevices among the roots; press the earth around the tree with the foot, commencing at the outer edge of the hole. The earth should be raised slightly above the surrounding level, to allow for settling. If it be thought necessary to use additional manure in planting, let it be old well rotted compost and in no case fresh stable manure. Except in

case of accident, this tree will be likely to occupy the place in which you have put it for many years.

Tuberoses in the South.

The delightfully fragrant and ever beautiful Tuberose is too seldom seen in our Southern gardens, and the impression very generally prevails that it is difficult to grow and does not flower well here. The same complaints are made elsewhere, but they arise from a lack of knowledge of the plant and its habits. The Tuberose is not a hardy plant, even in this latitude, and though the bulbs may remain in the ground over winter without being killed, and put out in the spring a fine show healthy-looking leaves, yet an examination will show that the centre of the bulb has been destroyed, in which case there will be no flowers. It is necessary, therefore, to keep the bulbs in a warm dry place till March or April for planting in the open border, or to start them in pots in a warm room, or in a greenhouse or hot-bed, in January, for earlier blooming. By pursuing this course and planting only good, sound bulbs, perfect at the centre, the Tuberose will be found as sure in blooming as the Tulip on the Crocus. Our friend Dreer, who sends us the accompanying cut, has some extra fine bulbs this season, a few specimens of which we hope to show in bloom, in due season, in confirmation of what we have here said.

Single and Double Flowers.

Why do some of the seeds from a double flower produce single flowering plants, while other seeds from the same flower produce double flowering plants? And why, further, do we sometimes get nearly all double flowering plants from a planting of seeds, when another planting from the same package, made at another time, or in another place, gives us nearly all single flowers? This has occurred repeatedly in our own experience. For instance, last year we had one of the finest displays of double zinnias that we ever saw, but few of our plants producing single flowers. This year, we planted some of the seeds left over from the same packages, some from the finest double flowers of last year, and some also received from trustworthy seedsmen. The results from all alike were, with very few exceptions—not one in a hundred—single flowering plants. Who can explain this? Can not our friends Berckmans, and Ravenel, or the accomplished editor of the *Gardener's Monthly* give us some light on this point in vegetable physiology?

Lima Beans as Dwarfs.

Two rows of small Lima or Sieva beans, planted in our garden on the second day of August and the vines, several times stopped by pinching off the ends, to dwarf the plants, matured a fine crop in October. A few hills planted earlier, and treated in the same way, bore heavily, but continued but a short time in bearing, compared with those on poles. Where poles are difficult to obtain, as in cities and towns, the dwarfing system will be found a very convenient one. Several plantings can be made in the course of the spring and summer, to keep up a succession of

crops. No natural dwarf bean—if any bean can properly be so called—will produce so much as the dwarfed Lima or Sieva, and no dwarf bean is half so good.

Dust and Disease.

Ladies who desire to keep their house plants in a healthy condition and looking fresh and thrifty must not allow the leaves to become covered with dust. If dust be often the cause of disease in the human system, as is no doubt the case, so it is in plants. The leaves are the lungs of the plant. If their pores be stopped up with dust, they cannot breathe, and breath is life to them as well as to us. Frequently give them a good showering with a syringe, or dip a little broom-brush in water and flirt it over them. It will do them good in more ways than one.

The Lemon Verbena as a Standard.

The London *Gardener's Chronicle* calls attention to the pretty effects which can be had from the common Lemon Verbena when trained as a standard. The wavy spikes of flowers are very graceful; and the odoriferous character of the plant will always make it a favorite in any form.

Excerpts and Comments.

The Rose Secret.—Max Klose, in the London *Garden*, says:

Instead of throwing my Rose prunings away this spring I used them as cuttings, putting a whole lot of them—about a dozen or more—in (I am almost afraid to mention it) a marmalade jar filled with coarse sand and water, with sufficient of the latter to be about a quarter of an inch or so above the sand. I then plunged the jars into a slight hot-bed (covered by a Rendle span-roof protector,) and let the cuttings have all the light and sun possible—never shading once. This was about eight weeks ago. Last week I thought I would have a look how the cuttings were going on at the bottom, as they appeared very healthy at the top; fancy my delight to find that the new roots had covered the sides of the jar, and were matted together in such a way that I had to wash the sand away under a tap to be able to separate the cuttings without breaking the roots. I call this "striking like willows;" some bits with only one eye at the top struck almost better than any; others, where I put perhaps two eyes beneath the surface of the sand, have struck from every eye. I can assure you I never saw cuttings so well furnished with roots as these were.

Two Crops of Cauliflowers from one Plant.—To get a second crop of Cauliflowers from your plants, a writer in the London *Field* says, simply cut the cauliflower with the usual complement of overlapping leaves; leave all the other leaves on the stem for a week or two. By that time most of the stems will have broken into from three to six shoots. Go over them, and choose from two to four of the best placed and strongest; three to each is a capital average. Remove or bend down any leaves that interfere with these advancing growths, and also any decaying or old worn-out leaves; allow all others to remain. Give the stems several good soakings of manure water, and a layer of dung if thought desirable; and in an amazingly short period of time another crop, perhaps as heavy—or heavier in the gross—as the first, may be cut from the old stalks.

Mr. Robert Chisolm, in a communication to the Rural Carolinian, some time ago, mentions the fact that he has often pursued a similar plan. The cabbage may be treated in the same way with like results.

C. L. Allen's Flower Farm.—In a report of the visit of the New York Rural Club to the propagating grounds of Mr. C. L. Allen, on Long Island, N. Y., the *Rural New Yorker* says:

There were eighteen acres of Gladioli in blossom. Perhaps our readers can imagine the mass of gorgeous color which three hundred named varieties, massed to this extent, would make. Then, in addition to the three hundred named varieties, there was a bed of 3,500 seedling Gladioli—among them as fine specimens as can be found among the three hundred named varieties; and several that will become distinguished for their unique beauty. Then imagine ten acres of Lilies, a large proportion of which were in bloom. These embrace also about 15,000 seedlings. Fifteen or twenty acres are cultivated in Tuberoses. John Henderson's new dwarf variety is here—about half as tall in growth as the old sort, and double—a decided acquisition, Mr. Allen says. There are a couple of acres of Peonias; also, Roses, etc.—full forty acres devoted exclusively to flowers.

The Carob Tree.—a correspondent of the *Pacific Rural Press* says that it is the fruit of this tree that is referred to in the parable of the Prodigal Son. The "husks" were the "pods" of this tree, which contain a small quantity of sweet substance, something like the honey locust. It is also sometimes called "St. John's Bread." The Carob tree is of a good size, and when the pods become heavy with sweetness they weigh down the branches on every side so that they have to be harvested to prevent injury to the tree. This tree would be very valuable in this country, as after it is once started it requires no irrigation, and would suffice to feed stock and hogs in dry seasons. Moreover, the more trees we can grow without rain, the more rain we shall be likely to have.

This tree would, probably, prove hardy in the Cotton States, and might be a valuable acquisition here as well as in California. Has any one grown it in the South?

Mining and the Mechanic Arts.

Fairbanks' Scale Works.

Away up in northeastern Vermont, nestled among the hills which crop out from the base of the Green Mountains, is the thriving little town of St. Johnsbury, which though now containing three thousand inhabitants, was fifty years ago scarcely a hamlet, noted even then, however, as the valley in which Governor Fairbanks and his brothers projected their manufactory of ploughs. In 1830 these mechanical geniuses conceived the idea of establishing upon the banks of "Sleeper's River" (how inappropriately named,) a manufactory for scales, which at first a nucleus, has been the means of building up this beautiful village, and has erected for the proprietors a monument more durable than the finest marble.

These works have grown with their age until they are truly wonderful in more ways than one. An eight-horse engine was once their motive power, and twenty years ago all the iron used was hauled in wagons from points no nearer than Concord, New Hampshire. To-day an engine of two hundred and fifty horse power, with its driving wheel of three feet surface in width, propels the machinery. The moulding sand is brought from New York, and the iron, twenty tons of which are

daily smelted, comes by rail from New York and Pennsylvania, and over the water from Scotland. The buildings cover an area of ten acres, and are so situated that every moment of time, every inch of space, and every stroke of labor is economized, even the waste material from one building being carried by machinery to another to be utilized. Ten thousand feet of plank are daily dressed in this establishment, and the very shavings are sucked up by fans revolving with lighting speed, and blown three hundred feet through square, boxed, wooden trunks to the furnace of the engine and there used as fuel. So completely is this work done that not two bushels of shavings are daily wasted. By a similar process the brass filings from the polishing stones are blown together and re-smelted.

Another of these fans, making fifteen hundred revolutions per minute, serves as a bellows for sixty different blacksmith's forges. Standing in the midst of these bright, burning, blazing forges, with no agency in sight fanning them, his ears tingling with the clanging of the anvils, and the pounding of the trip hammers, that strike, like things of life, either five pound strokes or one thousand pound blows, one feels as though those smiths might be truly the sons of Vulcan, and he in the vicinity of a locality not found this side the Styx.

All kinds of scales are manufactured here, from those so delicate that they can almost weigh a breath of air, to those huge, ponderous concerns that sustain and measure accurately the weight of a loaded car or even a canal boat with its hundreds of bushels of grain. Every pair of scales is subjected to the severest test before shipment; for instance, the heaviest amounts which their platform scales are capable of weighing are placed consecutively at the four corners of the platform, and if in each position the scales do not indicate the same weights exactly, the scales are returned as imperfect, and, therefore, condemned. An ounce weight will "head" their ordinary, and two ounces their heaviest platform scales.

The patrons of this manufactory live in every civilized nation; and the scales exported to foreign nations have weights adapted to their respective standard, and before shipment each set is subjected to the same test of accuracy with those sold in the United States.

During the first eight months of the present year three hundred and forty-one car loads of scales, twenty thousand pounds to the car, were shipped from St. Johnsbury, and so accurately are the shipments made, that a record is kept of every set of scales, its number, where and to whom sent. Recently, the Messrs. Fairbanks were advised by a purchaser, that the set of scales purchased of them were not accurate. They replied, please send us the number of your scales. The number was sent, and an examination of their books proved that that set of scales was sold to that man in 1851. The firm simply replied, it's quite time those scales were getting a little inaccurate. What beautiful system?

They have sold near half a million pairs of scales, and now-a-days their annual gross income is about two million of dollars. They employ six hundred hands constantly, at wages varying from one dollar and a half per day to an annual salary of twelve hundred dollars, all paid monthly. Job or piece work is, however, encouraged, and is the means often of developing inventive talents among the employees, which invariably redounds to the immediate promotion or advantage of

the genius. Most of these employees are men of family, and many of them own considerable property, accumulated from the liberal wages paid them by their employers, with whose respective families social visits are often exchanged.

Whilst the worldly comforts of their employees, and their domestic happiness are by no means ignored by these employers, every moment of their time that is available is also profitably utilized. To prevent loss of time in laying in family supplies, a market is furnished them at their very doors, where supplies of all sorts can be bought as cheaply, if not cheaper than elsewhere in the town. Groceries, hardware, dry goods, and every kind, quality and description of merchandise are kept in a store by the Messrs. Fairbanks, where such inducements are held out to trade, that even the town people often patronize them.

There are four night watchmen employed on the premises, and nothing indicates more clearly the perfect system by which this immense establishment is governed than this matter of night watch or police arrangement. At the principal entrance there stand a couple of instruments somewhat resembling two large clocks, which by having their internal works connected by wires with the various stations, of which there are fifteen, reveal the next morning by the hands on their dials, whether any watchman was not at his proper post at any given hour during the previous night, each watchman being required to give a certain signal from each of his respective posts so many times during the night. If he fails in a single instance the indicator tells on him the next morning.

The wealth acquired by the Messrs. Fairbanks has been lavishly expended upon the pretty little town of St. Johnsbury. Indeed, their success has built up the town, and but for these scale works there would have been no village there. Recently one of the firm has erected an Atheneum, a magnificent structure costing $75,000, supplied it with nearly 10,000 choice volumes, and donated it to the village. The first floor is the Library, with its Librarian and published rules and regulations; by conforming to these latter any citizen of St. Johnsbury can enjoy, free of cost, a thorough course of general reading, and have the privilege of perusing all the most valuable periodicals published in the United States or in England. As I walked into one of the alcoves of this beautiful hall, "The Water Power of Maine" was the title of the first octavo that caught my eye. A feeling of sadness crept over me as I read it. How incomparably superior, thought I, is the water power of almost every Southern State, where frost and ice never stop the water wheels from January till January; and yet where can one procure such geographical information? The little State of South Carolina has sufficient water power to drive spindles enough to twist up annually the cotton crop of the United States, if properly utilized. But as at present wasted, it might as well be numbered among the arcana of nature.

The second floor of the Atheneum is a spacious hall, supplied with a rostrum, and benches capable of seating comfortably five hundred persons. This hall is open five nights in the week, and is exclusively dedicated to the delivery of free lectures upon scientific subjects.

Another member of this firm has erected a large brick building, at an expense of $100,000, and endowed it as a female school. And still another is now erecting a similar building which will be liberally endowed as a male school.

The Messrs. Fairbanks are men of sterling integrity, and they, with their surroundings, are a sort of social and political opitome of the citizens of St. Johnsbury. They deal promptly, squarely, and generously with their employees, and exact of them work of the very best quality. They have never been harassed with strikes, moulders' unions, and the like. In reply to a queston on this subject, I was told, occasionally a new hand was employed who made enquiry whether a moulder's union or league of any sort was in the establishment? Such an one was always told, "You can take the next train, for we have no use for such help."

It was a knoty question with me, how these proprietors could be so independent? I have never seen the two antagonistic forces—labor and capital—so beautifully harmonized, and the only solution of the problem, I think, is their isolation, their lack of competition, and their liberality.

There is not, in the town of St. Johnsbury, a bar-room or grogery, and the sobriety of the citizens is very favorable to the Messrs. Fairbanks' establishment. There, idleness is discountenanced, drunkenness unknown, sham work inadmissable, and liberal wages are paid monthly. Artisans must make money, and capitalists receive a handsome return from their investment.

D. WYATT AIKEN.

Natural History Applied to Agriculture.

Specimens of insects, securely packed, (according to instructions given in The Rural Carolinian, for April, 1872,) with letters of inquiry, entomological notes, etc., should be addressed, (post paid,) to Mr. Charles R. Dodge, Washington, D. C.

The Harlequin Cabbage Bug.

This insect, which first made its appearance before the public as a cabbage destroyer, in Texas, six or seven years ago, seems to be spreading northward. Armies of them have taken possession of many of the cabbage patches in the vicinity of Washington, and with the further prevalence of the two cabbage worms, the cabbages are having a hard time of it.

The insect belongs to the *Hemiptera*, or plant-bugs, an order of insects which are provided with sucking tubes, or beaks, instead of jaws, and which generally have the same disagreeable smell as the bed-bug, which belongs to the same order.

The eggs of the insect are about one-thirtieth of an inch in diameter, yellowish in color, very much the shape of a tin can, and marked around the sides with dark lines or rings. The mother insect lives through the winter, and deposits these eggs on the leaves of the plants, generally on the underside, in two rows, forming a mass of from ten to twelve. In a short time the little larvæ contained in these can-like eggs cut out the upper cover by means of the piercer with which they are provided, and begin their life of destruction. The larvæ are nearly the shape of the perfect insect, and, like all hemipterous larvæ, are provided with perfect legs from

the commencement of life, but have no wings. In from two to three weeks, however, they acquire wings, and may then be called mature insects. They destroy all sorts of cruciform plants, such as cabbage, turnip, radish, mustard and the like, sucking their juices so that, in a short time, the plant wilts and finally dies; and Dr. Lincecum states that half a dozen of these insects will kill a cabbage in a day. There are two broods in a year, and enough insects hybernate "to keep up the breed" the following year. The insect is about one-third to one-half an inch in length, the general color is a dark blue, black, with bright, yellow or orange spots and markings, as shown in our figure.

Fig. 1.

The bug has no insect enemies. Birds and chickens will not touch them, and the only remedy, if it may be called a remedy, is to hand pick them from the vines as soon as seen, particularly the first brood.

Unlike most of the bugs in the family to which it belongs, it has not the disagreeable odor which nearly always characterizes a true "bug," but this is poor consolation when we look at the amount of damage it is capable of doing. It is called *Strachia histrionycha* of Hahn, and the common name "Harlequin Cabbage Bug" has been given, according to Riley, from the gay, Harlequin-like, manner that the black and yellow colors are arranged upon its body.

Answers to Entomological Correspondents.

Large Brown Insect.—J. J. L., Society Hill. The large brown insect you send for examination and description, and which you say an old farmer near you considers to be the cause of pear blight, belongs to the order *Heteroptera*, or true plant-bugs, (insects provided with a piercer or sucking tube,) and though it may injure and even destroy twigs and fruit by extracting the sap, it cannot be said to be the cause of pear blight. Many of the *Heteroptera* are beneficial in their habits, and live entirely upon other insects, which they catch and devour by sucking out their juices; and many others are vegetable feeders, so to speak, living entirely upon the juices of plants, but the injury is confined to that particular twig, terminal shoot, leaf or portion of the tree or plant that they attack, while in pear blight the *disease* extends over an entire limb, and often over the whole tree. We cannot give you the name of the insect.

In regard to the "Blood sucking cone nose," or "Big bed-bug," which you say was not appreciated by many of the "Rural readers," on account of its name, and from the fact that it was not illustrated, we can only say that we can do no more than to give the well known common names, and the history and habits of an insect, and that it is impossible to illustrate all the insects that are sent to us for name and description, particularly as many of them are not of sufficient importance.

Entomological Queries.—F. L. Porter, Austin, Texas. We are not able to say what caused the death of your silk worms, unless, as you state in your letter, their food might not have been of the proper sort.

If you fed them with white mulberry leaves, or the foliage of osage orange (*Maclura aurantiaca,*) we see no reason why they should not have thriven, as far as food is concerned, unless the leaves were fed to them wet. They are subject to the attacks of several diseases, principally of a fungoid nature. The first of these *muscardine,* is due to the development of a fungus in the body of the worm, causing death in a short time, after which the worm becomes stiff and rigid. We have several times, likewise, found ordinary garden caterpillars that had been destroyed by some fungus in a similar manner. There is another disease known in Europe as *pélrine,* which sometimes carries off whole colonies of broods of the silk worm. The disease is attributed to various causes.

The principal prevention of disease, in rearing silk worms, is to keep the boxes clean and sweet, and free from litter, and to feed regularly with fresh and tender leaves.

You ask how to set the legs, antennæ and wings of small insects. With small insects, it is generally the practice to merely pin the specimen allowing these parts to remain in the position assumed at death, though if the legs are to much drawn up under the body, or the antennæ out of sight, the defect can be remedied by gently drawing them out with the point of a pin while the insect is fresh. Very small beetles should be mounted on the card strips described on page 423, (May number,) of our last volume. Never throw away any insects on account of injury unless you are sure you have a duplicate.

A very nice way to set *Hymenoptera* is to turn a thin pasteboard box up side down, to form a kind of setting board, and after pinning the insect, to thrust the pin through the upturned bottom as far as the insect will let it go; it is then but the work of a moment to draw the legs, wings, and antennæ into a natural position, though if the wings have stiffened, a pin, here and there will be needed. In a few days the insects are ready for the receiving box. Don't be afraid of asking questions; we are here to answer them.

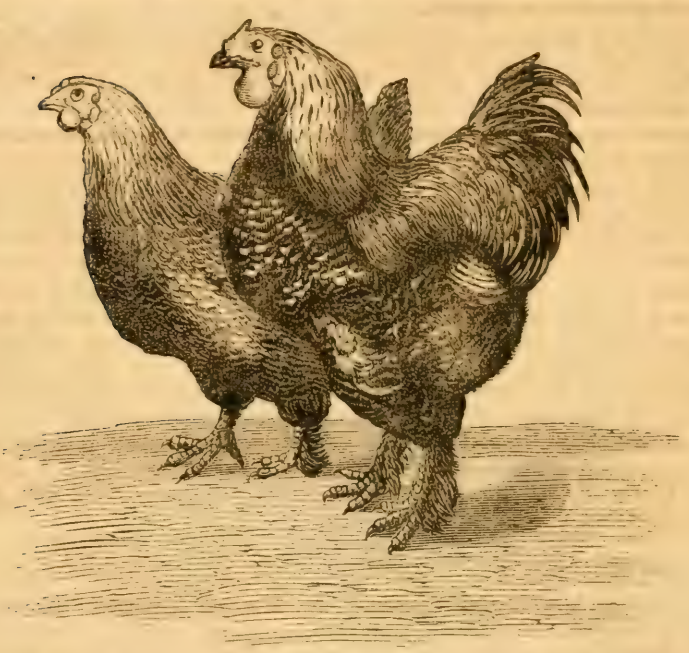
Cabbage Bugs.—W. M. D., Winnsboro'. The insects you send, which you say have destroyed your entire crop of cabbages, are well known Southern pests. It is the *Strachia histrionycha,* (Hahn) or "Harlequin Cabbage Bug." We give its history, habits, &c., on another page.

Large Worm found on Cotton.—T. W. H., Pomaria. The large green worm, with yellow horns, tipped with black, upon its head, and which you say you find in limited numbers in your cotton field, feeding upon the leaves, is the "Hickory Horned Devil," *Ceratocampa regalis,* mentioned in our last month's issue, in reply to W. W. A. As they appear in so small numbers they can do but little injury.

Early Rose Potato in England.—It would seem from reports that the Early Rose, in the second year of its trial, is destined to excel even the best of the English varieties. A gardener writing to the *Gardener's Chronicle* says he has it growing side by side with Fortyfolds, one of the best of the English sorts, and it has proved to be not only earlier but better in quality.

The Dairy, Farm Stock and Poultry.

The Dark Brahma Fowl.



Each breeder and keeper of fowls has his favorite breed, and for each, peculiar excellencies are claimed. The Brahmas, both light and dark, are very popular now and no encomiums are too high to be bestowed upon them, some preferring the former and others the latter. We think the breed an excellent one for our climate, and do not find much if any difference in value between the two varieties, though we think the Dark Brahma the handsomer bird.

The Brahmas are good layers and sitters and make the best of mothers. They bear confinement very well and are easily kept within bounds by a low fence. Being heavy and clumsy they sometimes break their eggs in getting on and off their nests, but this need not occur if the nests be low and convenient of access.

How Butter is Made on Ogden Farm.

Col. Waring, the proprietor of Ogden Farm, and a well known agricultural writer, sells his butter in Boston at *seventy-five cents a pound*, much to the astonishment of the steady-going farmers of the whole country. A correspondent of the *New England Farmer*, who has lately interviewed the dairy-maids of the establishment, thus tells what he saw and heard:

The dairy-maids were washing the tubs in which that part of the butter which is sold in Boston is carried to market. The tubs were oval, made like wash-tubs, with

two staves above the rest, in which are holes for the hand to carry them. On the outside is painted the words "Ogden Farm." A tin tub is fitted inside the wooden one, shaped like a common wash-boiler. Across each end is a partition, which gives a space for ice, which keeps the butter cold and hard. In the central part of this tin tub or case are movable shelves on which are placed the balls of butter. These are made as attractive as possible.

The milk-house consists of three rooms. The first holds the churn, wooden pails, &c. At the right, in a room, perhaps twelve feet square, with cemented floor, are racks to hold pans of milk in winter. Back of these rooms, and down five steps, is the milk-room now in use.

The milk is kept in deep tin cans, from nine to twelve inches in diameter and about twenty inches deep. These are set in a box of water, into which a stream of water is constantly running at one end and out at the other. The water falls into a cement gutter in the floor of the room and runs out into a pond where ducks and geese are enjoying themselves. Over this gutter, in the corner of the room, is a pile of about a bushel of charcoal, the object of which I judged to be to prevent the entrance of bad odors. Each of the cans in the water had a loosely fitting cover. As I touched the cream in one of them with my knife-blade to test its consistency and depth, I asked "is this all cream?" The attendant replied, "Oh no, it is milk, set for cream, and I suppose the cream is two or three inches thick." The temperature of the room was favorably cool, yet the milk is kept at the desired temperature by the stream of spring water that keeps the vat full.

They churn Tuesdays and Fridays. Last Friday's churning weighed eighty-two pounds, showing an average of about one pound a day to each cow. I do not doubt that good butter is made here, and that those who consume it are well satisfied to pay seventy-five cents a pound for it.

Value of Geese as Farm Stock.

To the cotton farmer, geese are the most valuable of all domesticated fowls. Ten goslings are fully equal to the best hoe-hand in the cotton patch. They will keep ten acres of ground perfectly clean of grass, if the ploughing is properly done. The most careful hoe-hand will bruise and skin cotton more or less, but geese will carefully pick all the grass from the young cotton without injuring it in the least. I am surprised that farmers do not make more and better use of them. They pay for their keep many times over in killing grass upon which they fatten; are salable in market and a luxury upon his table.

A farmer in my neighborhood, who knows their value, was offering last spring four dollars a pair for common geese, to put in his cotton field.

Since the war, I have raised all the geese I could, conveniently, and, principally, for the purpose of *working cotton*. And more than once, when it would have been impossible for me to have saved my crop with the labor at my control, they saved it. I find the large white Bremen not only the most beautiful of all the varieties, but the best "workers," and easily raised. I would advise every farmer to have his flock of geese, and pure Bremen, if he can procure them. They will work his cotton well without watching, and will save him a deal of tedious work or money. It is a beautiful sight to see thirty or forty Bremen geese in a field of cotton carrying their rows almost as regular as hoe-hands. Any farmer who plants twenty or thirty acres of cotton, will never be without geese after once testing their value. The greatest objection to them is that they have not forgotten that deafening quack with which their ancestors saved Rome. Any unusual sight or noise about the premises, will put the whole flock to quacking.

L. A. H., *in the Plantation.*

Stable and Stock-Lot Memoranda.

How to make Cows give Milk.

A writer in one of our agricultural exchanges (the name of which we cannot recall) says that his one cow gives all the milk that is wanted in a family of eight and that from it, after taking all required for other purposes, two hundred and sixty pounds of butter was made this year. This is, in part, his treatment of the cow :

If you desire to get a large yield of rich milk, give your cow every day water slightly warm and slightly salted, in which bran has been stirred at the rate of one quart to two gallons of water. You will find, if you have not tried this daily practice, that your cow will give twenty-five per cent. more milk immediately under the effects of it, and she will become so attached to the diet as to refuse to drink clear water unless very thirsty; but this mess she will drink almost any time and ask for more. The amount of this drink necessary is an ordinary water-pailful at a time, morning, noon and night.

Feed as affecting Manure.

Under this heading the *Maine Farmer* says: Few truths in agricultural economy are better established than this: that the better and richer the feed given to animals, the better will be the manure made. Animals kept on straw, and coarse, rough fodder, with little or no provender, even if they have this sort of food in abundance, will produce manure of very inferior quality to that made from corn meal, cotton seed, rape cake, or other articles rich in nitrogen. It is a custom with the best English farmers—a custom as well as a business—to feed for the purpose of obtaining the manure. And while there is almost always a loss in feeding animals upon purchased food, leaving out of calculation the manure they make, all experiments show that feeding animals is the cheapest mode of obtaining manure, especially if one wishes to restore or maintain the fertility of a farm.

The Grub in the Head of Sheep.

The *New England Homestead* says: "Dr. Martin Sackett, of Westfield, gives the following receipt for curing grub in the head of sheep; one tablespoonful of butter, melted and mixed with a teaspoonful of spirits of turpentine. Turn this into the sheep's ears once a day for one, two or three days, as the case may require. He says that it never fails."

Patrons of Husbandry and Agricultural Societies.

The State Grange of South Carolina.

Agreeably to a notice issued by the National Grange, Patrons of Husbandry, the Masters and Past Masters of the subordinate Granges of the State of South Carolina, and the Deputies of the National Grange in the State, assembled in Columbia, on the ninth day of October, 1872, for the purpose of organizing the State Grange. There were one hundred and twenty-five delegates present, including Fourth Degree members entitled to seats on the floor, but not to votes in the organization; and a finer body of men it has never been our privilege to see. The agriculturists of the State may well be proud of their representation on the occasion; and it was refreshing and encouraging to witness the earnestness and zeal universally manifested.

They had come together as Patrons of Husbandry, and they had come together to work and not to make speeches for "Buncombe."

The meeting was called to order by the Worthy Secretary of the National Grange, Bro. O. H. Kelley, and proceeded at once to the choice of officers, when the following were duly elected:

Master, Thomas Taylor, Columbia, Richland Co.
Overseer, A. D. Goodwin, Fort Motte, Orangeburg Co.
Lecturer, John S. Richardson, Sumterville, Sumter Co.
Steward, J. K. Davis, Monticello, Fairfield Co.
Assistant Steward, T. W. Holloway, Pomaria, Newberry Co.
Gate Keeper, Drury Nunnamaker, Lexington Co.
Chaplain, J. I. Bonner, Due West, Abbeville Co.
Secretary, D. Wyatt Aiken, Cokesbury, Abbeville Co.
Treasurer, A. M. Aiken, Greenwood, Abbeville Co.

The following resolutions, offered by Worthy Lecturer Richardson, were adopted:

Resolved, That a committee on business, of ten members, be appointed by the Master to prepare business for the State Grange, and that the said committee be required to report at the next meeting of the State Grange.

Resolved, That a committee of five be appointed by the Master to prepare and report on a Constitution and By-laws for the government of the State Grange, and that they report at the next meeting of the State Grange.

Resolved, That the Master be requested to appoint one deputy in each County to organize subordinate Granges, and that he assign them their Counties to operate in.

Resolved, That the Master be requested to procure an appropriate seal for the Grange.

Resolved, That when this Grange adjourns, it adjourns to meet on the second Wednesday in January next.

Resolved, That the Master of this Grange be requested to visit Washington, and be present at the meeting of the National Grange, on the first Wednesday in January next, and to post himself in all matters necessary to a complete and full organization of the State Grange at its next meeting, and that his expenses be paid out of the funds in the Treasury of the State Grange.

Resolved, That the first quarter's report be required from the subordinate Granges by the 24th of December next, to be made to the Secretary of the State Grange.

Action was also taken in regard to the purchase of fertilizers by the Granges, and Worthy Secretary Aiken was required to make the necessary inquiries of the various companies manufacturing them in relation thereto.

The Worthy Master reported the following as the committee of ten on business: J. S. Richardson, Sumter; J. P. Reed, Anderson; D. C. Tomkins, Edgefield; W F. Barton, Orangeburg; R. M. Sims, York; T. W. Woodward, Fairfield; E. R. McIver, Darlington; James McCutchen, Williamsburg; Julius Mills, Chester; W. T. Henderson, Abbeville.

Also, committee on constitution and by-laws: W. M. Shannon, Camden; S. C. Means, Spartanburg; L. A. Harper, Colleton; J. R. Spearman, Newberry; F. A. Conner, Abbeville.

With the strictly secret business which took up a considerable portion of the Session, the public has, of course, no concern, nor with the excellent dinner given in honor of the occasion by the Columbia Grange, and participated in by over one hundred Patrons. It is enough to say that it did credit to the Grange and passed off with the utmost harmony and good feeling.

Progress of the Order of Patrons of Husbandry.

The progress made by the Order of Patrons of Husbandry in this State has been unprecedented in the annals of Secret Societies, and the facts are worthy of a brief record here.

Less than two years ago, the writer of this notice, so far as he knows, was *the only Patron of Husbandry in South Carolina* and the magazine he has the honor to edit the only Journal that had ever published a word in its favor. Many papers in the State, and elsewhere in the South, were asked to publish or notice a circular setting forth the objects, aims and modes of operation in the Order, but all declined. It was a new thing. They would wait and see what came of it. They have seen!

Less than one year ago, there was but one Subordinate Grange in the State—Ashley Grange, No. 1, Charleston—feeble in numbers and means, but strong in the faith of a few earnest workers among its numbers. How different the position and prospects of the Order in South Carolina to-day! Now there are over *eighty* Subordinate Granges, fully organized and working, and many more waiting for Deputies to organize and instruct them. We have also the strongest State Grange in the United States except that of Iowa.

This unexampled progress is due, in a large measure, to the earnest and efficient labors of Worthy Deputy at Large, D. Wyatt Aiken. All honor to him and to the other Worthy Brothers who have aided in the work; but we claim for ourself and the RURAL CAROLINIAN, (without which our humble influence could have reached but few) the credit of having set this ball in motion, not only in South Carolina but in Mississippi and the Southern States generally. We mention this fact simply as a matter of history, and in order that the Patrons' favorite Journal shall be assigned its proper place of honor on the records of the Order.

The Order is now a power in the land—a benign power—a power for good and not for evil. Let us keep it pure, sanctioning no unworthy membership and permitting no departure from its noble principles and lofty aims. Let us hand it down as it is to-day, in its essentials, but improved, if possible, in its details and workings, to our children and to the generations of the future. ESTO PERPETUA.

Information concerning the Order of Patrons of Husbandry and the necessary blanks, instructions and authority for the preliminary organization of Granges in South Carolina and Florida, can be procured by addressing D. H. Jacques, General Deputy, Charleston, S. C.

Several Questions Answered.

"A Patron" asks several questions, which, as they may be of general interest, we answer here:

1. Yes, all Subordinate Granges, as well as the State Grange, require a seal which may be procured from the National Grange, or it may be designed and engraved expressly for the Grange.

2. Previous to the organization of the State Grange, Masters and Past Masters of Subordinate Granges had authority to organize Granges, but they can not do so now, unless appointed as Deputies by the Master of the State Grange. The Deputies of the State Grange also supersede the Special Deputies of the National Grange; but the General Deputy, and the Deputy at Large, retain their authority.

3. Your mistake was natural and entirely excusable, but there is no conflict of authority, and no duplication of officers as you seem to suppose. Worthy Secretary Aiken's Commission from the National Grange, is that of "Deputy at Large for the Southern States," while ours is that of "General Deputy for the State of South Carolina." No question of "jurisdiction" has arisen, or is likely to arise. We think these answers are plain enough and to the point.

Our List of Subordinate Granges.

We give in this number as nearly complete a list of the Subordinate Granges in the South as we are able at present to obtain. There are, as will be perceived, a few blanks to be filled out, and there are, doubtless, some errors in the names of officers. Secretaries of Granges will confer a favor by sending us any corrections which may be required. We shall add lists of Granges in other States as we obtain them. Secretaries of Granges, in States where no State Grange exists, will oblige us by reporting at this office the necessary information.

A Suggestion to Patrons.

Allow a Patron to suggest to his brethren the propriety of offering premiums to the members of each Subordinate Grange for the largest yield of the various field crops, of the best bred animals, etc.—all awards to be in conformity to the regulations of the State Agricultural and Mechanical Society. The successful competition at home would be a sufficient guaranty of a probability of success at the State Fair. A move of this sort will add much interest to the individual Granges, and decided success to our State Fair.

October 7, 1872. POMARIA.

It should be remembered that the State Fair opens at Columbia on the 4th inst.. and closes on the 8th. From all accounts there seems to be a promise of an excellent display in all departments, and a full attendance.

A LIST OF SUBORDINATE GRANGES IN SOUTH CAROLINA.

Name of Grange.	*Postoffice.*	*County.*	*Master.*	*Secretary.*
1. Ashley,	Charleston,	Charleston,	A. B. Rose,	Wm. Ufferhardt.
2. Maysville,	Maysville,	Sumter,	W. J. Muldrow,	B. F. Wilson.
3. Sumter,	Sumterville,	Sumter,	J. A. Richardson,	A. White.
4. Cokesbury,	Cokesbury,	Abbeville,	F. A. Connor,	W. Sims.
5. Due West,	Due West,	Abbeville,	J. I. Bonner,	J. A. Robinson.
6. Loundsville,	Loundsville,	Abbeville,	J. M. Latimer, Sr.,	Wm. A. Giles.
7. Calhoun,	Calhoun's Mills,	Abbeville,	Jas. McCaslan,	J. L. Covin.
8. Long Cane,	Bradley's Mills,	Abbeville,	W. K. Bradley,	J. E. Bradley.
9. Greenwood,	Greenwood,	Abbeville,	A. M. Aiken,	L. W. Jordan.
10. Ninety-Six,	Ninety-Six,	Abbeville,	J. W. Calhoun,	G. M. Jordan.
11. Clairmount,	Stateburg,	Sumter,	John B. Moore,	R. J. Brownfield.
12. Mar's Bluff,	Mar's Bluff,	Marion,	F. M. Rogers,	Walter Gregg.
13. Darlington,	Darlington C. H.,	Darlington,	E. R. McIver,	A. S. White.
14. Society Hill,	Society Hill,	Darlington,	W. H. Evans,	J. A. Wilson.
15. Cheraw,	Cheraw,	Chesterfield,	Jas. C. Coit,	S. G. Godfrey.
16. Baltimore,	Baltimore,	Marion,	J. C. Sellers,	Willis Fore.
17. Manchester,	Manchester,	Sumter,	W. A. Ramsey,	S. H. Ramsey.
18. Little Rock,	Little Rock,	Marion,	E. T. Stockhouse,	J. Stockhouse.
19. Marion,	Marion C. H.,	Marion,	C. D. Evans,	J. B. White.
20. Centenary,		Marion,	J. B. Young,	E. B. Smith.
21. Aiken,	Bennettsville,	Marlboro',	W. J. Cook,	T. E. Dudley.
22. Saluda,	Cokesbury,	Abbeville,	W. T. Henderson,	C. C. Law.
23. Milway,	Chile's Cross Roads,	Abbeville,	J. W. Hearst,	W. E. Cothran.
24. Orange,	Orangeburg,	Orangeburg,	W. F. Barton,	M. Glover.
25. Winyah,	Georgetown,	Georgetown,	Benj. Allston,	R. E. Fraser.
26. Fort Motte,	Fort Motte,	Orangeburg,	A. D. Goodwin,	C. T. Goodwin.
27. Pomaria,	Pomaria,	Newberry,	T. W. Holloway,	David Suber.
28. Crooked Run,	Winnsboro',	Fairfield,	N. C. Robertson,	J. L. Cauthen.
29. Winnsboro',	Winnsboro',	Fairfield,	T. W. Woodward,	J. C. Caldwell.
30. Columbia,	Columbia,	Richland,	Thos. Taylor,	R. W. Gibbs.
31.*				
32. Chester,	Chester,	Chester,	W. A. Walker,	J. L. Wilson.
33. Sandy River,	Chester C. H.,	Chester,	W. H. Hardin,	J. H. Hardin.
34. Fishing Creek,	Smiths' Turn Out,	Chester,	G. A. Blake,	R. H. Crawford.
35. Rich Hill,	Chester C. H.,	Chester,	J. Blackshom,	O. A. Wylie.
36. Rock Hill,	Rock Hill,	Chester,	A. E. Hutchinson,	A. H. White.
37. York,	Yorkville,	Chester,		
38. Fort Mill,	Fort Mill,	Chester,		
39. Concord,	Sumterville,	Sumter,	W. J. Pringle,	A. J. Chandler.
40. Lancaster,	Lancaster C. H.,	Lancaster,	W. A. Moore,	J. A. Hasseltine.
41. Waxhaw,	Waxhaw,	Lancaster,	J. W. Stevens,	B. F. Massey.
42. Gooch,		Lancaster,	H. H. Gooch, Sr.,	J. Brown.
43. Wateree,	Camden,	Kershaw,	Wm. M. Shannon,	J. Kershaw.
44. Liberty Hill,	Liberty Hill,	Kershaw,	J. F. McDow,	W. H. Thomson.
45. Flat Rock,	Flat Rock,	Kershaw,	J. J. Granthum,	J. S. Gardner.
46. Frog Level,	Frog Level,	Newberry,	W. B. White,	S. J. Hiller.
47. St. George's,	St. George's,	Colleton,	L. A. Harper,	T. H. Abbott.
48. Robert Swamp,	Graham's,	Orangeburg,	J. T. Shoemaker,	T. B. Boyd.
49. Cross Hill,	Cross Hill,	Laurens,	W. A. Fuller,	J. C. Cook.
50. Laurens,	Laurens C. H.,	Laurens,	Wm. Anderson,	U. Y. Holmes.
51. Clinton,	Clinton,	Laurens,	R. S. Griffen,	W. B. Bell.
52. Tumbl'g Shoals,	Tumbling Shoals,	Laurens,	W. D. Sullivan,	W. H. Mabalfy.
53. Beth Eden,	Newberry C. H.,	Newberry,	H. H. Folk,	J. P. Kinard.
54. Belmont,	Newberry C. H.,	Newberry,	L. E. Folk,	H. D. Boozer.
55. Silver Street,	Silver Street,	Newberry,	J. R. Spearman,	W. R. Spearman.
56. New Chappell,	Newberry C. H.,	Newberry,	Frank Moon,	M. J. Boyd.
57. Barnwell,	Barnwell,	Barnwell,	Wm. A. Martin,	W. L. Care.
58. Allendale,	Allendale,	Barnwell,	J. W. Olgivie,	J. S. Stoney.
59. Buford's Bridge,	Bamberg,	Barnwell,	G. W. Move,	L. Ayre.
60. Spring Town,	Bamberg,	Barnwell,	E. H. Dowling,	W. B. Rice.
61. Edgefield,	Edgefield C. H.,	Edgefield,	Z. W. Carwile,	M. W. Abney.
62. Meeting Street,	Meeting Street,	Edgefield,	D. C. Tompkins,	Alvin, Hart.

* Through an error in the Secretary's Office, at Washington, there is no Grange with this number.

Name of Grange.	*Postoffice.*	*County.*	*Master.*	*Secretary.*
63. Hampton,	Ridge Spring,	Edgefield,	R. E. Nicholson,	John Kennerly.
64. Fork,	Columbia,	Lexington,	D. Nunnamaker,	J. L. Shuler.
65. Plowden's Mill,	Manning,	Clarendon,	A. J. Tendall,	J. N. Hodge.
66. Monticello,	Monticello,	Fairfield,	J. K. Davis,	H. M. Zealy.
67. Spartanburg,	Spartanburg,	Spartanburg,	J. H. Evins,	O. H. Kerby.
68. Tyger River,	Spartanburg C. H.,	Spartanburg,	S. C. Means,	S. D. Miller.
69. Williston,	Williston,	Barnwell,	H. M. Thomson,	J. M. Hair.
70. Greenville,	Greenville C. H.,	Greenville,	Alex. McBee,	W. A. McDaniel.
71. Anderson,	Anderson C. H.,	Anderson,	J. P. Reed,	J. A. Hoyt.
72. Abbeville,	Abbeville C. H.	Abbeville,	J. F. C. Duprée,	T. P. Quarls.
73. Cooper Swamp,	Midway,	Orangeburg,	Benj. Pooser,	S. T. Islar.
74. Branchville,	Branchville,	Orangeburg,		
75. Graham's,	Graham's,	Barnwell,		
76. Indiantown,	Kingstree,	Williams'g,	Jas. McCutchen,	W. D. Knox.
77. Glen's Spring.		Spartanburg,		
78. Union,		Union,	A. W. Thomson,	J. L. Young.
79. Fairforest,		Union,	G. D. Peake,	D. Johnson.
80. Meador's,		Union,	C. C. Farr,	S. Crosby.

LIST OF SUBORDINATE GRANGES IN MISSISSIPPI.

Name of Grange.	*Postoffice.*	*County.*	*Master.*	*Secretary.*
1. Rienzi,	Rienzi,	Alcorn,	W. L. Williams,	C. W. Williams, Jr.
2. Columbus,	Columbus,	Lowndes,	C. Hardy,	W. B. Winston.
3. Boonville,	Booneville,	Prentiss,	Wm. Grasham,	M. E. Taylor.
4. Aberdeen,	Aberdeen,	Monroe,	E. F. Colby,	E. O. Sykes.
5. Wilkinson,	Woodville,	Wilkinson,	D. L. Phares,	P. R. Leatherman.
6. Early Grove,	Early Grove,	Marshall,	A. J. Vaughan,	R. A. Baird.
7. Zion,	Columbus,	Lowndes,	P. Mullen,	W. J. Boyd.
8. Parmitchie,	Parmitchie,	Alcorn,	Geo. W. Bynum,	L. D. Settle.
9. Liberty,	Liberty,	Amite,	T. J. Jackson,	J. R. Galtney.
10. Mt. Pleasant,	North Mt. Pleasant,	Marshall,	Benj. Norris,	L. Gatewood.
11. Centerville,	Centerville,	Amite,	Jno. Y. Reiley,	A. S. Germany.
12. Watson,	Watson,	Marshall,	R. J. Lyle,	W. E. Futrell.
13. Noxubee,	Macon,	Noxubee,	S. V. D. Hill,	A. A. Miner.
14. Wood Lawn,	Columbus,	Lowndes,	J. C. Neilson,	A. P. Presley.
15. Verona,	Verona,	Lee,	R. C. Clark,	Jas. Williams.
16. Shubuta,	Shubuta,	Clarke,	R. J. Lawrence,	J. P. Hays.
17. Corona,	Guntown,	Union,	Sam Bryan,	H. L. Holland.
18. New Hope,	Columbus,	Lowndes,		W. Barksdale.
19. Capitol,	Jackson,	Hinds,	L. F. Alford,	J. W. Patton.
20. Hudsonville,	Hudsonville,	Marshall,	D. T. Rook,	E. K. Kirby.
21. Carmel,	LaGrange, Tenn.,	Marshall,	L. Parham,	J. S. Worsham.
22. Hazlehurst,	Hazlehurst,	Copiah,	A. P. Barry,	Floyd Ford.
23. Cen'l of Madison	Canton,	Madison,	T. J. Alsworth,	G. W. S. Vaniz.
24. Cen'l of Hinds,	Raymond,	Hinds,	Jno. Lusk,	Joseph Gray.
25. Horace Greeley,	Canton,	Madison,	J. T. Cameron,	E. M. Avery.
26. Dry Grove,	Dry Grove,	Hinds,	W. F. Standefer,	T. W. Reynolds.
27. Harris Chapel,	Davis Mills,	Marshall,	Calvin Chairs,	T. S. Harris.
28. Hanging Moss,	Shubuta,	Clarke,	Jehu Everett,	J. H. Horne.
29. Zion,	Coonewa,	Lee,	B. F. Raspberry,	T. E. Lankford.
30. Hope,	Camden,	Madison,	W. Harrington,	R. A. McMartray.
31. Terry,	Terry,	Hinds,	Wm. Hester,	J. E. Goodlette.
32. Waterford,	Waterford,	Marshall,	Jno. H. Miller,	W. M. Wilkins.
33. Henkle Creek,	Rienzi,	Alcorn,		
34. Grafton,	Brookhaven,	Lincoln,	J. M. Grafton,	W. A. Towns.

LIST OF SUBORDINATE GRANGES IN TENNESSEE.

Name of Grange.	*Postoffice.*	*County.*	*Master.*	*Secretary.*
1. Stockton,	Stockton,		W. A. Simpson,	
2. Moscow,	Moscow,		A. Gober,	J. S. Hill.
3. LaGrange,	LaGrange,	Fayette,	C. B. Jones,	W. E. Franklin.
4. Sardis,	Sardis,		B. F. Baird,	A. J. Farris.

Miscellaneous Correspondence and Notices.

A Successful Experiment with Clover.

Editor of the Rural Carolinian: The successful growing of clover has always been a question of doubt in South Carolina. In this region, thirty miles N. W. of Columbia, the experiment, to a limited extent, has been tried, and when properly put in, and on deep red, or stiff bottom lands it has succeeded. In March, 1871, I put in a two and a half acre lot with oats, upon which I sowed twenty-five pounds red clover seed, covering with a light brush. February, 1872, I broadcasted one hundred and fifty pounds plaster to the acre, while the dew was still on the clover. In May, when it was mowed, in places it was three feet high. I hauled twelve four-horse loads of splendid hay; supposing each load contained eight hundred pounds, I got ten thousand pounds, or two tons per acre. At first some of our old fogies laughed at the idea of growing clover here, but when once convinced by facts patent to the eye of the most incredulous, resorted to the subterfuge that it may rain and get the hay wet, and one, Thomas-like, urged as an objection that there was not sufficient room between the cockes to drive a team to haul out the hay!

The success of this experiment alone has induced the purchase, by our farmers, of over three hundred pounds red clover seed, with continued sales. Now, soon (7th October) I design putting in of Red Clover, Timothy, Red-top or Herds Grass, Blue Grass and Orchard Grass; in all, ten acres. The Blue and Timothy is really an experiment, but as to the others I have no fears as to the result.

October 7th, 1872. POMARIA.

The Palma Christi Remedy for Cotton Worms.

Editor of the Rural Carolinian: Some years ago I saw a statement (in the *Southern Cultivator* I think) to the effect that some one had allowed a stalk of Palma Christi to grow in his cotton patch, and that the cotton worms came along and made clean work of all in his vicinity, except such as was within two hundred yards of this plant, which was left undisturbed.

I had been annoyed with them a little for three years in succession, and as the experiment was easy, I procured a few seeds and planted one (all that was necessary) in the centre of my patch; also one in my garden. I have done this for two years, and whether it is the result of the presence of this plant or not, I cannot say, but while there have been cotton worms, cabbage worms and a host of smaller intruders in the neighborhood, my plants have not been touched by them. If any person wishes to experiment with the Palma Christi, and has not the seeds, will send his address on a stamped envelope, I will furnish them, or I will exchange a few for some *red clover seed*, say two ozs. J. THOMAS KIRBY.

Shiloh, Sumter Co., S. C.

[We do not wish to discourage any one from trying the easy experiment suggested, but must say that we have not the slightest faith in its success. We have not tried the Palma Christi (*Ricinus*) as a remedy for the cotton caterpillar, but we have the plants growing about our house and garden every year without any effect, so far as we can see, upon the insects which infest our plants.—Editor.]

The Red or Mexican Cotton.

EDITOR OF THE RURAL CAROLINIAN: For the information of your correspondent at Olustee Creek, Ala., I would remark that the "Novel Cotton," which he describes as being "stalk, leaves, and forms of a dark red color," is by no means a new variety. My attention was attracted to a few isolated specimens among the common cotton several years ago, and I was at first disposed to regard them as freaks of Nature; but I since learned that it is a variety introduced into these parts several years before the late war, and called "Mexican Cotton." It was very popular with a successful planter of Orangeburg County, who planted it exclusively.

As regards the quality of being "Rust-proof," I can avouch this much, that I have never seen a stalk in a blighted state, and it was this particular feature which led me to make the enquiry about it. From the few specimens I have been able to observe, I am of opinion that it is a much more thrifty variety than the other, but not so prolific, and of slower development; which latter characteristic is probably the reason of its being rust-proof. It is certainly well adapted to light, sandy soils, and I regret very much that the seed is not to be had in these parts.

Barnwell County, S. C. JNO. C. MILLER.

Inquiries and Answers.

H. A. G. desires information in regard to the application of salt to cotton lands; how to apply it, whether in compost or separately; at what season of the year; how much to the acre, and should there be more or less on light lands than on stiff lands? Our custom has been, when using salt at all, to compost it with any other manure we were applying in such quantity as to give from two to three hundred pounds to the acre. If we made any difference, we should use more on light than on stiff soils. We should be glad to hear from others, who have had experience in the use of salt as a manure, on the foregoing questions.

———Sumter. One peck of Herds Grass and two quarts of White Clover would be sufficient; but Herds Grass will not succeed well here, we think, except on rather moist soil. Alfalfa and Lucerne are the same, the former, being the Spanish name, has come into use in California. Of Gama Grass we know nothing, personally, but it is highly spoken of by some of those who have grown it.

———Gardener. We have already (October number) given briefly *our* experience with Rhubarb. It may do better in your up country soil and climate. Asparagus is at home here and anywhere in the South. It is the fault of our people and not of their climate if they lack a supply of this delicious vegetable.

———For the information of inquirers for improved cattle, Mr. John Witherspoon, Society Hill, S. C., writes us that he has two young bulls, twelve and sixteen monthts old, of the Patterson Devon Stock, in reference to which he would correspond with persons who may desire such animals.

———C. M. Y. We are not aware that there is any Jute seed for sale in this country. We will write to the Commissioner of Agriculture as requested, but doubt the practicability of the arrangement proposed.

———We have a communication for "L. A. B.," who wants a Derby Game cock, but have lost his address. Will he please send it to us at once.

———Japan. The Japan peas are excellent for the table, both green and dry, whatever your neighbor B. may say to the contrary. When dry, soak twelve hours or more and cook in soft water, adding no salt till they are nearly done.

———Sportsman. Capt. L. A. Harper, St. Georges', S. C., has some beautiful sporting dogs, bred from the best imported stock. We speak from personal knowledge, having seen them.

General Notices and Acknowledgments.

Most of our readers have heard and read of, and perhaps eaten, Guava Jelly, but few have seen and eaten the fruit from which it is made. It grows to perfection, however, in our sister State of Florida, in evidence of which we lately received a box of it in excellent condition from our friend and correspondent, C. F. Powell, Esq., of Picolata. Contrary to general experience, we liked the fruit at the first taste. Some Guava Jelly, in the same box, proved to be delicious, demonstrating the skill of Mrs. Powell, as well as the excellence of the fruit. A single very fine specimen of the Guava since received from E. H. Hart, Esq., of Federal Point, reminds us again of the fact that this tropical luxury may rightly be classed among the resources of our Sunny South-Land. With slight protection, Mr. Hart believes that the Guava will thrive and perfect its fruit as far north as South Carolina, especially an early variety which he is cultivating. We have one of the shrubs on our grounds, planted last fall, and carried safely through the winter, but it has not yet fruited. Mr. Hart promises us an article on the cultivation of the Guava.

Almost all our leading weekly journals now furnish their rural readers with an "Agricultural Department." In some cases, these departments are edited with signal ability and by good practical men. One of the most noteworthy examples is that of the weekly New York *World*, the agricultural editor of which is Mr. H. E. Colton, whose knowledge of farming and agricultural chemistry, as well as his intimate acquaintance with the South and its resources, enable him to make it exceedingly acceptable to Southern readers.

We take pleasure in acknowledging, with many thanks, the reception of a choice collection of winter and spring flowering bulbs, from our good friend and correspondent, Henry A. Dreer, of Philadelphia. We have no doubt but that their bloom will fully sustain the reputation of his establishment, and prove a better advertisement than any "puff" we could write, even were we skilled in the art of puffing, which we are not.

"Hobkirk" finds an ugly misprint in his article on "Book-Farming vs. Experience." Where he wrote "boot and joint," we printed "root and fruit." Perhaps our compositor couldn't "read writing," and perhaps our valued contributor couldn't, or *didn't* "write reading" quite so plainly as is desirable. Hope he will send us another article and allow us to try again.

Literature, Science and Home Interests.

THE CAVE OF THE WINDS.

PART II.

Despite his eagerness to return to establish himself in the old Branwell House, Branwell felt all the lonesome heartaching of an exile when he had reached the manorial house, and fitted it up with the warm colors, the accessories of perhaps a too luxurious taste. Spring, which he had fancied far advanced when he left France, lingered long away from this cold northern country, and it was June before the glorious vitality of a coming summer seemed near to the land.

It was a life of unrest, and yet of a soothing quiet, which Branwell began in those weeks of solitude. The peace of a life not ill spent thus far was bringing a healthful content to his heart, and thus idling among his books and his out-door sports, he began to think of himself as perhaps made for one of those country gentlemen whose hopes do not extend beyond the day. He discovered that a rich man, with a country house of rare sylvan and seaside attractions, is not without friends to break up the solitude.

July sun had hardly warmed that cold air into fervid beatings, when, returning from a long stroll on the beach, made murderous by a gun in his hand and two or three birds in his game-bag, Branwell entering his grounds by a rear gate, heard from the lawn the laughter and voices of a party who had invaded his retreat. He found some gay friends he had met in Paris, two young Americans and a young Parisian, a boy of nineteen or twenty, whose life Branwell had saved, by a fortunate accident, two years before. Branwell's face brightened as he saw them. With the courteous ease that distinguished him, he advanced, while one of them exclaimed:

"You see, Branwell, it's no use for you to attempt playing the bachelor hermit—not so long as we can make a raid upon your dominions."

Branwell's words of welcome were heartfelt, for indeed the presence of the genial party was very revivifying to him, who had nothing of the recluse in his nature. The enthusiastic clasp of the hand and glance of the eyes of the Frenchman seemed an elixir of joy to him, and the guests found in their host an exhilarating gaiety, which would have made a less luxurious home attractive, and day followed day in the careless freedom of untrammelled life.

"By the arching of your brows I should say the mail brought you news," said Victor, as they sat after supper one night, and Branwell was hastily opening and reading his letters.

"Some women to make this pagan world a paradise," laughed Branwell. "Victor, arm thyself in gallantry, for this letter informs me that we may hourly expect my aunt, two cousins, and a friend who is staying with them —all ladies.

Victor, who stood by the widnow, exclaimed, "And the sound of approaching wheels heralds their arrival;" and an instant later the two young men came to his side, and Branwell stepped into the veranda. "Good heavens, gentlemen, do you see that lady?" The eyes of the mercurial boy flashed flame, ruby color sprang to cheeks in intensity of his surprise and admiration.

"It is Proserpine," said one, peering through the vines as the carriage drew near.

"Nay, by all the gods, it is the divine mother of love; it is Venus!" said Victor, remaining in forgetful admiration while the others escaped to their rooms.

Branwell stood upon the steps and saw the familiar faces of his relatives; then a deep flush rose to his face as he saw, leaning back in her seat, surrounded by that indescribable air of refinement and grace, Miss Lorillard, no longer pale from illness, but with the faint, transparent carmine of health baptizing her face in rarest beauty. In that swift sensation of surprise there was mingled with its pleasure a feeling of alarm, an anxiety which exasperated Branwell.

"This is my nephew, Miss Lorillard," said Mrs. Richmond, the aunt, standing upon the steps and looking complacently forward already to the time when the love affair might spring up between the two, for Mrs. Richmond had become captive to the power of her new friend.

There was some infusion of coldness in Branwell's greeting, which Miss Lorillard could not fail to detect, and it gave the key-note to her own manner. With the most polite of distant finger-clasps she said with suavity:

"I did not anticipate, when Mrs. Richmond persuaded me to visit with her, that I should find my host and her nephew the Mr. Branwell whom I had met."

That cool indifference made Branwell instantly repent; and gave a warmth to his manner which must have satisfied his guests.

Words have such meagre power to picture the days that followed—days over which was the arch of a golden summer, in which was the penetrating power of some Circe, shedding over that gay household the smiles of lips that could not be easily forgotten. The ladies were ephemeral, brilliant, shallow; among them Miss Lorillard shone with infatuating lustre, for her tact never led her astray, never

gave a wrong turn to converse, never the glance that should have been different or withheld.

To those who interpreted by face, by glance, by tones, the life of the young Frenchman had come to the dazzling romance, the enchanted ground of youth. He loved, or rather he adored with vehement passion, this woman of fair face who had come to him a princess of richness and purity.

It was a day of grayness; a sombre gloom spread over the sky; the sea heaved upwards in a long leaden line, dark as the heavens under which it breathed. That breath of the east, piercing and yet full of wild exhilaration, swept over the water, over the shining sands, and up across the veranda of the Branwell House, where Miss Lorillard stood in riding habit, her face impatiently turned toward the stables.

Victor, coming up the path that led along the marsh at one side of the house, saw that figure with that thrill of fiery life which blesses or curses youth. He sprang forward and reached her side just as a groom was leading her horse up to the steps. He stood eager, palpitating, and put her on her horse, saying:

"Miss Lorillard, give me leave to accompany you."

She stooped over him as he stood leaning against her horse, while he arranged her drapery, the soft folds seeming to him a touch of something dear and alive.

She caressed him with her eyes, letting her glance linger on the enthusiastic handsome face.

"But I am bound on a solitary expedition," she said softly.

"But I will not break that solitude, I will be mute; take me as a faithful follower," he pleaded.

"Be faithful and stay at home," she said.

"But the day is dark and cheerless," he urged, permitted, unwittingly encouraged, by her face and voice. "I feel that I could even protect you from the elements themselves. Let me go."

She drew up the lines from her horse's neck, exclaiming:

"Rash boy, who would dare the elements! No, I will go alone now, as always;" and her horse paced statelily down the avenue, leaving the young man with a deep crimson on cheek and lips, a thrilling remembrance of the indescribable sadness of tone which had said "as always."

Miss Lorillard, riding along the sandy road and on to the wide beach, had entirely forgotten Victor. Her face had lost its look of seductive allurement, and was turned gravely toward that dark, retreating sea. The sharp, gusty wind swept a vivid color to her cheeks.

Far out, on the bosom of that wind, was rising a heavy fog, gray, like this sunless day. Faster and faster she rode, the quick strokes of her horse's feet, the vast roll of the water, the only sounds that she heard. So she rode over the sands, leaving the Branwell House a phantom mansion at the end of the beach, and none in that house could see the restlessness, the defiance, the longing on the face schooled to look as the woman willed.

Meanwhile the day wore on. The fog reached the land, enveloped it in its damp embrace.

Victor wandered restlessly about the house, his eyes often trying to pierce the cloud that hung over the beach, that made things indiscernible when but a few yards away.

Branwell, returning from an absence since morning, found the house insufferably dull. With wearied, half-smothered yawns, he tried chess with his aunt, tried to listen to music from his cousin, all the while unconsciously listening for a sweep of drapery, a step in the hall, a hand on the door that should prelude the entrance of Miss Lorillard.

Victor, too, was absent, and Branwell thought vexatiously that he was detaining her. But soon Victor entered, unmistakably wearied.

Branwell saw him hang his wet coat in the hall, then saunter in with a quick glance around the room.

Quelling with inward indignation his impatience, Branwell scorned to ask for Miss Lorillard; but Victor, leaning gloomily upon the window, turned and said:

"Has Miss Lorillard returned?"

Branwell listened to the answer that she was expected soon. He turned abruptly from the music, and exclaimed, rather than said: "From where is Miss Lorillard to return—across the beach?"

Mrs. Richmond looked up in placid surprise, and Victor gazed at his host with greatening eyes, feeling some indefinable anxiety.

"Miss Lorillard took a fancy to ride over to Darton village alone this morning," was the response, "and she said she should be back about this time. Is it not so Monsieur Victor?"

Victor impolitely shook his head, his glance upon Branwell's blanching face.

Branwell started to the door, asking as he went: "Does Miss Lorillard know anything about the tides in the bay?"

Mrs. Richmond rose in alarm, and her daughter from the piano looked back, terror upon her face, but deep in her heart the lingering shadow of the envy she had felt.

"Indeed, I do not know," said Mrs. Richmond hurriedly. "I am sure I don't know anything about the tides myself; I don't think she does."

Branwell did not stay to explain. The next moment he was in the stable, throwing a saddle upon his horse. As he did so a hand was laid upon his arm, and pallid lips asked:

"Branwell, for God's sake, what is the danger?"

Even then Branwell felt a pitying interest that made him half pause in his hurried movements as he said:

"I only fear she will attempt to cross the beach at the turn of the tide. I am going round to Darton by the road to reach her before she starts home, if possible. The tide turns in less than an hour." He sprang upon his horse then glancing round once more, he bent forward and laid his hand on the boy's shoulder.

"Victor!" he exclaimed in a subdued voice, "what is this woman to you?"

The utter pain of Victor's face appealed to the man's heart, and the tone he used was tender as if it had been to a son.

Victor's slender hands interlocked each other, his eyes burned beneath a sparkling humidity. "She is all the world—life, heaven itself. I would sacrifice my soul for her!" he murmured. "And I cannot save her—that is for you."

Branwell loosened his rein. "It is safest that I should go," he said; then turning he flung back upon the damp air the words: "Victor, thy salvation is thy youth. Be a Telemachus; let no Calypso charm thee!" and galloped away, his horse cleaving the mist and vanishing.

That ride to him seemed ever after a dream—a dream of curious feeling. He felt that he could annihilate space to reach that village before Miss Lorillard should leave it. Every moment his ears seemed stung by that swift on-rushing roar, but it was not yet time. His foaming horse at last gained the street of the little village. He rode up to the postoffice, knowing that Miss Lorillard sometimes posted and received letters there.

"Had she been there?"

"Yes."

"How long since? had she returned?"

"Not more than fifteen minutes since she and a gentleman rode away toward the beach."

Branwell could have cursed him for the thoughtlessness that let a stranger go at time of high tide across the sands. But he turned silently, a gray pallor settling over his face, his nerves strung to a tenseness that after-vibration would show. So interested was he that he hardly noticed the mention of a man being with her.

Back again into the thick fog that overhung the beach he pressed, riding along the stony ridge of high-tide mark. One of those sudden flaws of wind, like a touch of the divine hand itself, blew strongly across the land, lifting a stratum of fog clear up along the shore, and revealing the white foam of the dark water, the flat level of marsh and beach.

It seemed to Branwell that he could have pierced with his eyes as with a sword, the whole length of the miles and miles of sand.

He had ridden but a few rods when this blessed wind swept up the dampness, and he saw, far down the beach, by the very edge of the water, the figure of a woman, not on horseback, but walking with that slow movement with which one walks by the ocean.

Branwell's pulses bounded with the throbs of unutterable thanks. Only let him reach her! In the enthusiasm of that moment in which he spurred down the slope he could have given life for her he had come to rescue.

Hardly a rod had the brave horse leaped, when there came that long shuddering boom that betokens the tidal marvel. The water crested itself, it rushed, it rolled. Onward pressed the horse, vibrating, trembling, but still on. Branwell saw Miss Lorillard turn and flee back; he saw that at every step her feet sank further and further in the softening sand. His animal's feet drew hardly from the sucking, treacherous stuff, but a moment before so firm. Far up, the wild hogs feeding on the debris of the beach, at that first horrible sound, turned snorting and ran before the tide.

He was now so near that he could see her plainly; the hat thrown off revealed her face, ghastly and yet with a determined strife in it. Her long riding-dress was swung dexterously over her arm; her feet, tightly shod in thick boots, at first bounding over the sand, now pulled with painful difficulty, and she lagged with panting breath. Every step she sank deeper and the swift motion of Branwell's horse had changed to the painful step that seemed as if every instant it must yield.

"One moment more!" cried Branwell, "One struggle more! Oh, Miss Lorillard, you will not give up!" As he spoke the fog settled down again, a spray from the oncoming water drenched them both; he stooped from his horse, he caught her up without actually stopping to do so. At that moment Branwell felt within himself a strength more than human. He instilled into that quivering horse the indomitable resolve he felt. The beast toiled and battled with the agony of that time; he floundered, he struggled back with his double burden.

At last, with a shrill cry of terror, he sprang upon the ridge and sank down on the stones, every muscle relaxed and strengthless.

Branwell slipped from beneath his fallen steed, and, himself weak and tremulous, sat on the ridge, the water boiling and seething at his feet, while he supported in his arms the woman he had saved. The damp gold of her hair fell over his arm, her eyes were closed, the breath that swept his face was so faint that he almost doubted if he felt it. In the gloom, the intensity of that moment, it seemed to Branwell that the angels of his life were at war with each other. Strangely, with that imperial head upon his shoulder, there came before him the memory of the night of his

marriage—the vows so false and mocking that he had uttered. Miss Lorillard had in some way entered his life, had coiled sinuously about thoughts before entirely unoccupied. There was a power in her presence to which he yielded. Every spark of gallantry in him obeyed her slightest behest. If art there had been, it was art so veiled as to be exquisite.

In swift flashes all of their intercourse sped through his brain, as he held her on that wild beach, waiting for a return of consciousness.

That sigh, the precursor to the glance trembled over her lips; the deep, lambent eyes opened, and the hand pushed back the masses of hair that trailed over her face and neck—the struggle of returning thought to the enervated body. She looked at the face above her with its glance fixed upon her, the hair and beard dripping with the brine from whence she had been rescued. The horse had regained his feet, and stood mutely awaiting his master, his nostrils dilating with his heavy breath. They were shut in by the fog; apparently they might have been alone in the world—this horse, this man, and this woman of marvellous face.

Branwell waited till she should speak, but she was silent. She raised her head and looked down at the swirling water, and the breath she drew was a convulsive shudder.

"Miss Lorillard," said Branwell, "this has not been an agreeable introduction to the Bay of Fundy. Hereafter I can trust you out of my sight, and know that you will remember this tide."

She looked up at him, and in that mutual gaze was something that for the moment raised in Branwell's soul an indescribable tumult. Her magnetic eyes seemed glancing through his being, and yet he was not happy.

"Remember? Oh, I cannot forget!" she said in that voice scarcely above a whisper, which, when rightly attuned, is capable of holding all grades of passion or supplication, love or tenderness. To him who listened, there seemed a tone of everything in that voice. Never had he heard it thus before, but unaccountably no master chord of his heart stirred; roused though he was through all the superficial, evanescent emotions of his nature, no tone of grandest and best vibrated within him; and yet he was charmed, enthralled in a manner by this woman whom he had just saved from a horrible death.

She uttered no words of thanks; words after that voice, that glance, would have been tame and insufficient.

She had removed from his arms, and was gathering her hair in a coil, wringing the sea water from it.

"I am too mortal to envy the sea nymphs after this," she said, with one deft twist fastening her hair in that most trying of all fashions to the beauty of a head and face, the old Grecian twist.

Branwell had risen, and holding his horse by the bridle, with the other hand he assisted her to rise. Thus standing for a moment with clasped hands, and looks bent upon each other, there came the sound of swift hoofs, and from the mist emerged a horseman, whose face, with its white eagerness, gleamed ghostly—a phantom rider.

With a sudden exclamation, Victor drew up and dismounted. He stood beside the lady, clasping her hands with trembling grasp, probing that face with his passionate eyes, unable, at presence of her danger, as yet to speak a word.

Evidently the lady did not just relish that revealment of interest. She withdrew her hands; a pale, icy smile flitted across her lips. Branwell, looking on, pitied sincerely this boy whom he loved.

To Victor this was the first experience of her coolness; he shuddered inwardly, as if stricken by a blast from the land of snow. But deep in his soul was still thrilling that glance of soft encouragement that had so penetrated him that morning when she rode away. This sudden freak seemed the incubus of a dream.

"Miss Lorillard," he stammered, "are you injured?"

"None at all," was the reply.

"Then Branwell reached you in time," he exclaimed.

Miss Lorillard's eyes glanced coolly from her interrogator's face to that of Branwell, and Victor writhed at the tone and look with which she said:

"Yes, Mr. Branwell was just in time to save me."

The boy suffered dreadfully. Riding forth, with his impetuous heart throbbing with love and fear, to meet this woman pale and languid, just rescued by another man, and to have her meet him with indifference—that was maddening.

Perhaps neither of those two men had any suspicion of the impatience, the anger, that Miss Lorillard felt at that intrusion. The smile that had so warned Victor could have willingly struck him down.

Branwell thought this scene, from some intangible cause, one of the most disagreeable, and without knowing why, his voice was somewhat cold as he said:

"Miss Lorillard, allow me to put you on my horse; we will walk home over the ridge."

"I will not so trouble you, particularly as there is no need of it; you will find my horse fastened at the head of the beach yonder. We will all ride home as gayly as if I had not occasioned this scene."

If there was some latent bitterness in Miss Lorillard's nature, it was not then visible. The scorn and anger that had struggled to appear were now quelled.

Without a word, Victor mounted his horse

and galloped after the steed of the lady. The two waiting stood in utter silence. Branwell had no idea why it was, but the charm, the exquisite romance of that time was lost. Not a pulse bounded while standing by her side.

A flush gradually mounted to her very brow. The quelled anger must hang out its banner of crimson.

It was but a few moments before Victor returned, and the three rode slowly back to the house, a silence that seemed almost gloom settling upon them, and Miss Lorillard would make no effort to dispel it.

But the next morning, though languid and pale, she came down to breakfast with the old smiles, the old power of driving ennui from the house. When she saw Victor alone, though there was nothing in the words she said, yet he suddenly became exhilarated as if by wine; despair left his eyes, and they lightened beneath hers.

Some sort of a change seemed to have come over the household. Miss Lorillard drooped, grew thin and pale. Since the ride on the beach, she had struggled to maintain the gracious vivacity which is hardest of all things to assume when physically dejected. Evidently Miss Lorillard was ill, or getting to be so, and the fact, the seductive languor of face and attitude, made the heart of Victor ache with that wild longing to comfort, to soothe, to infuse strength into this woman, who had become of all the world the one woman to him.

"I believe Miss Lorillard is ill," said Mrs. Richmond, standing beside her nephew and looking on to the lawn where Victor and Miss Lorillard were walking—the thin face of the lady looking so clear and shadowy as to well warrant the passionate tenderness that Victor could not conceal.

Branwell started and looked at the two.

Was she the cause of the unhappiness he had felt—the dissatisfaction almost amounting to rebellion?

"Does she say she is ill?" he asked.

"She says nothing about it," was the reply; then, after a moment's silence, "Is it not singular, that Frenchman's infatuation concerning her?"

Branwell winced under the words and his aunt's keen eyes. In truth the woman was angry with her nephew that he had not made swifter wooing.

"She is magnificent," he said; "nothing is singular that should be caused by her beauty."

"You do not act as you speak," she said, with a quiet contempt.

"I know my own life best, dear aunt. Do not make more intricate the path I walk," he said with coldness, that made it impossible for her to speak again on the subject.

The next day the physician pronounced the fiat of travel for Miss Lorillard. She received it quietly and went up to her room, leaving Mrs. Richmond full of a project to which the doctor's words had given birth.

"William," she said confidentially, "let us all go to Niagara. We shall make up such a delightful party, and the journey will be just the thing for Miss Lorillard. What do you say?"

Branwell was eager to go; he perhaps might exorcise the unquietness within him—lay to rest forever the ghost of doubt that was pursuing him. And he felt that he could never be at ease, never sleep freely, until he had solved the doubt that was ever present with him. Was Miss Lorillard his wife? Was this the woman to whom he had pledged himself? Never by one word, never by anything tangible could he have said that she knew that he was her husband; and yet he felt in some way that he was held to her by some tie which she could recognize, though it was unknown to him.

The journey was arranged; Victor was to accompany them, and it was the night before their departure—a night of ineffable summer time—when through the faint, warm mists the stars shone with the near lustre of that season, and the sea rolled out before them, its deep heart calm as the night which blessed it.

Victor went down the path to meet the postman, and returned with a letter which bore a French postmark, and which clouded his face with a fear that he might be recalled. As he walked across that garden, fragrant with blooms and perfumed greenery, he saw Branwell bending over the figure of Miss Lorillard, her face upraised, and in the star sheen looking more divinely beautiful than ever.

When Victor came down from his room there was the glow of some passionate impulse upon his face. He pushed through the shrubbery to where he had seen Miss Lorillard. On his way he met Branwell and Mrs. Richmond, and with a pulse-bound of terrible eagerness he thought that Miss Lorillard was alone. But he found one of the Misses Richmond with her. Curbing with an effort the emotion which possessed him, his gleaming eyes still revealed to Miss Lorillard the fire he could not subdue; and when Miss Richmond rose to join her mother, Miss Lorillard rose also, with some light word to Victor to accompany them.

The light word, the careless glance, seemed to ignite the fury of jealousy, despair and envy, which was consuming the young man.

His burning hand detained, with a touch upon her arm, Miss Lorillard as she was turning away. She looked back with a smile upon her face, ignoring the desperation in his, and said:

"Your commands, sir?" with that lightness that is so heartless when one feels in such sincere earnest.

"My entreaty is that you will grant me your presence for a while," he said in the controlled voice of excitement.

"But, monsieur, there is a grand pow-wow concerning a change in our journey. Must I forego participation in that?"

The continued unconcern of her manner goaded him to the exclamation:

"Forego nothing, Miss Lorillard, not one trifle, even for the sake of my eternal happiness."

Hearing those words, and looking at the speaker, no one could charge them with exaggeration. Miss Lorillard turned at the touch and tone and said, "Victor!" with that mingling of surprise and kindness with which such women address a man whose love they cannot help but know.

With imperative gesture Victor placed her hand within his arm and walked with her along that perfumed path to a deeper solitude. Even at that moment Victor could not suspect her falseness. His whole soul was ready to rush through his lips, a fiery essence that might inflame the imagination if it did not reach the heart of her to whom it should be offered.

"I have a letter to-night recalling me home immediately," he said.

"Ah, then we are to lose you? We shall be very sorry. Can you not postpone your departure?" she said in tones of warm politeness, that tortured the poor fellow till he could have killed both her and himself, and died with a wild joy that thus he died with her. Overleaping all her kind indifference, he turned his flaming eyes upon her and said with all the ardor of youth and of the South: "I love you, Miss Lorillard. I love you with fury, with madness, with life and death!"

His lips trembled with those fierce words, his head was bent toward her, but still he restrained himself from even touching the fingers that lay upon his arm.

It was impossible that such words and such a presence should not call a faint flush to her cheeks, but she withdrew her hand from his arm with admirable astonishment, her cool, beautiful eyes stabbing him as she spoke:

"Victor, I am surprised, inexpressively sorry."

He fastened her gaze with his gleaming eyes and said: "Are you surprised? Has my whole being been thus awakened by you and you have not known it?"

"I have told you," she said, and then with a soft measuring of her words, and with a heightened color, she continued: "And, Victor, even if I could love you it would be a sin, for I am a wife."

Victor paused in his walk as though those words had paralyzed him; his face was white, so white, as he looked at his companion, that she involuntarily cried, "Victor, you are ill!" and took his icy hand in hers.

"No, madam," he said with unconscious use of that word "madam," "I am very well." Then with a sadden assumption of self-possession he said:

"It is, perhaps, ungallant to ask of Miss Lorillard if she thinks it unusual that one should fall into the belief that she is unmarried! I cannot offer an apology for believing what she chose to wish that all should believe."

His voice, cold at first, wavered at the last, tremulous with the excitement and the blow he had received.

Her eyes drooped, and there was such deprecating music in her voice that he flushed again, trembling with her power.

"Victor! apparently I deserve all your reproach. I will try to bear it. Circumstances concerning which I cannot tell you have encompassed me in such a peculiar way that I am only free to act as I have done. With that meagre explanation let the subject rest forever."

Victor did not reply. With French courtesy he offered his arm, saying:

"Shall we go in?"

The woman saw with her keen, detective power that her companion had reached that pitch of intensity of feeling when he must of necessity appear cold, though his fiery lips, the white heat of his face betrayed the fire within him.

They walked in silence to the door; on the veranda Victor said, with that graceful touch of hat and bow which was second nature to him, "Adieu, madam; I shall not have the pleasure of seeing you again."

Miss Lorillard had not the effrontery to utter a word save a murmured farewell; and Victor walked across the marsh path to the rocky palisades of the beach.

Miss Lorillard entered the house; the company were assembled in the drawing room in conclave concerning a different route proposed. She joined them and animatedly discussed the plans, and only Branwell, who could not help watching her, discovered the sheen of something unusual in her eyes, but no tone or gesture betrayed anything.

The morning dawned, as the night had departed, in the splendor of the summer solstice. At breakfast Victor had not appeared, but it was not unusal; the meal proceeded, enlivened by the careful talk, the polite jest. Midway through the repast a servant flung open the door, and with white face and wild eyes exclaimed:

"Mr. Branwell, sir! the Frenchman!"

Even in that moment of surprise and alarm Branwell glanced at Miss Lorillard as he rose from the table saying:

"What has happened to monsieur?"

She made a movement of terror, but now sat pale and silent, while the other ladies uttered exclamatory questions.

"He is on the beach, dead," said the servant, while his master put his hand on his shoulder and hurried him out, scarcely believing what he said, and the ladies, speechless

with anxiety, huddled into the parlor to watch for Branwell's return.

"Take me down to him," said Branwell, and they strode hastily along the beach till they came upon the place where lay the figure of the Frenchman, his young face upturned to the rising sun, too motionless and cold ever to be warmed by that sun again. Branwell knelt upon those glittering sands that now appeared so heartless to him. He raised that head with its drenched, black hair, and looked down into the face, blank and expressionless forever, save that it held a look that seemed a sort of placid weariness. The waves that had thus tossed him upon the shore had swept backward, and were foaming far down the slope. Everything was sparkling with the abandon of a bright morning. Its brightness wounded Branwell to the heart. He held the beautiful head to his breast, not thinking whether the boy had ended a life no longer endurable, or whether some chance wave had come to him with the blessing of death in its embrace. He was dead; there was no hope of infusing life into those lips, for he had been dead many hours. The morning star had smiled coldly upon him in the hours of early dawn.

Sitting thus with the boy in his arms and his servant standing awestruck near, there came a light step, and after a while of intent looking a voice said:

"He will live? He is not dead?"

Branwell could not immediately look up. He knew what figure of grace was near him and that knowledge grated upon him through all his nature—why, he could not tell. He replied:

"There is no hope. He is long since dead."

Still Miss Lorillard stood, her eyes fixed upon the group—that man who had died for love of her—that other man, strong, self-reliant, thus far impregnable, whom she hoped she might some day bid live for love of her. In her turbulent heart at that instant there was a darkness that in a woman of less persistency would have become despondency.

Branwell beckoned to his servant and bade him go and make arrangements for conveying the body of Victor up to the house.

Miss Lorillard came nearer, stooping to look at the face of the boy. She appeared impelled by some impulse to gaze upon the icy face that last night had looked such passionate love to her.

"My God!" she murmured, "is this thing possible!"

Branwell raised his eyes and met her glance.

"It is possible," he said. "He was a fiery young Frenchman, and you—oh, have you not been verily a woman to him!"

The words were spoken with that sorrow that strikes one as most bitter of all, the sorrow that permits of sarcastic reproach.

Miss Lorillard sank on her knees by Victor's side; she pressed her hand upon her heart, that hand Victor's lips had burned to kiss. Tears filled her eyes and fell over her white cheeks. For a moment neither of them spoke or moved. Branwell's heart softened toward her as he looked. Again he felt that power which she held. He had been harsh to that beautiful woman, whose tears were almost mingling with his.

"Miss Lorillard," he said, "my grief has made me bitter. I can but ask forgiveness from you."

It was not easy to forget her face as she looked at him; it was not easy to feel one doubt of those tear-wet eyes; and yet Branwell, deeply and strangely as he felt attracted, could not rest in an utter belief in her.

"Mr. Branwell," she said, in a voice whose music seemed enhanced by the tremor in it, "I cannot bear that you should misunderstand me; that you do, I know. Here beside this boy, whom I respected and loved, even in his death, I feel that you know me still less than before." Her voice broke; she was apparently unable to go on.

Branwell's eyes, though misty with tears, burned with an almost passionate interrogation of this woman's nature. At that moment he could not imagine the art of this well-chosen interview. Her presence was telling more forcibly than ever upon him.

His servant returned accompanied by a fellow servant; they placed Victor on a stretcher and conveyed him to the house. As the two men moved away, Branwell turned to Miss Lorillard, whose tearful eyes were following the form that was being borne across the beach. No sign betrayed her knowledge that his gaze was upon her.

"If she is an actress—good heavens, whom would she not deceive!" he thought, believing at that moment that he could stake much upon her truth and honor.

After a moment she turned with a movement of weariness from the place, and walked slowly along, following the sad group in advance.

Branwell with an impulsive movement stepped to her side and clasped the listless hand with a fervid touch, the index to a feeling she had failed hitherto to rouse in him.

He held the hand tight clasped. His eyes were striving to penetrate her soul.

"That boy loved you," he said, endeavoring with all his power to free this woman in his own soul from any tampering with such a love.

Still the lowered, quivering eyelids.

"Was it my fault, Mr. Branwell?" with the tremulous accents of wounded pride and sorrow.

"It is not your fault that you are marvellously beautiful," he murmured with more enthusiasm, more abandon than she had ever known before in him. In truth this mood, this

time, touched him more deeply than he knew. The half reproach he had at first felt was changed by her dexterous words and gestures into an impulse nearer akin to tenderness than anything he had known before. Miss Lorillard did not reply, but at last, to the glance fixed so earnestly on her, she raised her eyes in response. Alas, that human eyes cannot always obey the behests of their owners! An indefinite something in those eyes swimming in tears gave to Branwell an instantaneous feeling of distance. He released her hand, the ardor died from his face. Miss Lorillard averted her head that he should not see the flush of anger that dyed her cheeks.

"Indomitable man!" she thought, "I have some way made another false move. But I will yet subdue him."

The party of pleasure travellers was detained a week. The funeral of the Frenchman was observed in the house of the friend he had loved so well; and the woman who had wounded him to death wept at his burial. It was not discovered whether Victor wilfully took his own life, or whether some mis-step from the rocks gave him his death. To Branwell and Miss Lorillard, though neither of them spoke of it, there was little doubt that Victor ended voluntarily a life he deemed forever hopeless.

Branwell, the night before the day again fixed for their departure, was alone in the room his uncle had used for a library. He had caused all the principal papers belonging to his uncle to be removed here, as he intended this should be his home. He had been idly examining apartment after apartment of a huge desk which the elder Branwell had stuffed full of every kind of papers he had wished preserved. He had begun in search of a particular document, and that found, had continued poring over the yellowing papers. Frequently he saw mention of the ward, and she was always spoken of as "my daughter." Interested, he looked on, hoping now to find some picture, some hint of the face of this ward who was his wife, for hitherto he had never been able to find any shadow of that mythical person. He opened a large old-fashioned pocket-book, in whose recesses several letters were stored—letters in the handwriting of his uncle. With mere listless curiosity he unfolded the first that came to his hand; from it there uncurled a long, soft spiral of golden hair, of a hue so rare and beautiful that Branwell knew he had never seen it upon but one head, the head of Miss Lorillard. In texture and color it was precisely the same. Indeed, it seemed not likely that two persons should possess hair of that peculiar color.

Branwell's eyes dilated with such a complexity of feeling as almost deprived him of the power to read the paper which had enclosed it. It was something relating to this daughter, and it mentioned that he enclosed the lock of hair she had that day sent him from school, and that he should soon expect the picture. The hair coiled up on the palm of his hand, soft, with a sort of caressing. Why should he feel as if he should cast it from him, with the violence of a shudder? Absorbed in that discovery, he did not at first notice the phrase which mentioned a picture, but at last, laying down the hair which had exercised a sort of fascination over him, he turned again to the letter; then he looked eagerly in the apartments for the miniature. He came soon to it, a little daguerreotype case tied together with an envelope addressed in the hand of a school-girl, but still a hand that promised flowing characters for its maturity.

Branwell, with fast pulses and tingling blood, pushed the spring of the faded case; it was to be his first glimpse of his wife's features. The lid sprang open, and there, smiling at him, was the face of Miss Lorillard—her face, though younger, in her early teens.—There could be no mistaking it. The brilliant blonde face, though here it was more in promise than in ripeness—a suggestion of all she had since become. The man gazed at that face with the feeling of one upon whom had fastened a nightmare from which he knew he never could waken. The Old Man of the Sea had been a light curse to bear, he thought. This woman, who had half fascinated him, from whom he had yet some way felt repelled—this woman, now that it appeared morally certain she was his wife, could lay claim to him, could announce him as her husband. He recoiled in despair from such a fate. As he looked, he remembered that still her presence might exercise the old power—that there might be moments when he could almost affirm that she possessed a charm more strong than any he should probably ever know. But away from her, as sometimes with her, he felt she was not only powerless to hold, but that she repelled all the best of his nature.

She had been travelling since her marriage. In what manner had she spent the fortune he had settled upon her? for that she had spent it, he concluded from the fact of her haunting his steps. Now that he was no longer the blind, helpless man whom she had married, or now that her freak, which he had so willingly obeyed, had subsided, she returned to him, safely disguised from his eyes, to win his love, as she had doubtless won the trust and affection of his warm-hearted uncle. Had she come to desire the position of his wife? Those eyes smiled sweetly upon him from the glass. He opened the letter which had accompanied the picture. Its style was young, but easy and correct; it was full of love to her father, of eagerness to get home, and contained a long account of school life. It was directed to the uncle's city residence, where he had lived for many years,—always, Branwell thought, since

he had adopted this girl. That long, girlish epistle would have been pleasant to Branwell had he read it any other time, had he thought of its author with other feelings.

Now he regretted, and not for the first time, the accident which had destroyed the only letter he had ever received from this girl—this girl, who, with an assumption of gravity at the close of her writing to her guardian, had signed herself F. Lorillard.

"Fermor Lorillard!" uttered Branwell under his breath, leaning back and dropping the sheet from his fingers. "She thought to win me, to infatuate me as she has probably done many other men, and then to reveal to me whose name she bore—to establish herself at once in my heart and my fortune. It must be rare sport to conquer one's husband!"

Branwell rose and walked the room. At length, pausing by the window and looking into the garden below, he saw Miss Lorillard walking slowly up and down by the parterre of blooming flowers, her head depressed as if in deep meditation. She looked unmistakably pallid and weak. Since the adventure on the beach, she had apparently not been well; the excitement, the exposure to the water had appeared to effect her; for she had suffered from a languor she could not dispel—a langour which made her irritated with herself when she had need of all her powers.

"She is not my wife!" Branwell said with grim earnestness. "If ever the time comes that she proclaims it, I will require the utmost proof. Oh, this is too humiliating! A woman in whom I cannot believe, try as hard as I may."

He felt an impulse to go down and question her concerning her past life, to probe her whose self-possession appeared impregnable.

In another moment he was at her side. She glanced at him quickly, detecting in the instant some change in his face, and guessing what it was, though she did not betray that supposition.

He made some desultory remark, then said, with an assumption of ease he did not feel:

"Do you know, Miss Lorillard, you appear to me a mystery which I cannot solve? Are you really so mysterious, or do you envelop yourself in an incognito to attract the interest of poor mortals like myself?"

"Put curiosity is the place of interest," she said, "before I can reply."

"No, I cannot conscientiously do that," he replied. "It *is* interest that I feel, Miss Lorillard. Can you doubt it?"

Had his words been lover-like in the least, she would have known how to reply, but they were not. He was the most impracticable man she ever knew. And what made her most angry of all, she felt, despite herself, a feeling for him that, with satirical self-derision, she denominated "*une grande passion*," and it was in truth as near that as she could know. It was perhaps that which gave her that curious ebb and flow of power over him.

"Well, no, I do not doubt it," she said in answer to his last question; "but, unfortunately for you, there is no mystery connected with me. It would be impossible to weave a romance about me."

"What, not even in connection with the unknown chevalier you met up at the village?"

Branwell did not know why he said that; he knew it was not exactly gentlemanly, and when he had joined her, the thought was far from him; indeed, he had almost forgotten the words of the postmaster.

In that sentence he had diverted the channel of Miss Lorillard's thoughts into an entirely different direction. She raised her eyes to his face, while an anxiety was inwardly shaking her.

"Ah," thought he, "the postmaster was mistaken; she rode away alone."

"The chevalier is indeed unknown," she said quietly. "I don't know what you mean."

"An idle tale of a man in Darton," Branwell hastily responded, "who, seeing a princess riding through the street, imagined that she must be attended by her knight." He watched her closely, half ashamed of the undefined suspicions he felt. She smiled with care-free ease, her entire manner that of one to whom concealment was a stranger, and yet Branwell felt she was a riddle whose secret he would give much to read. Did she believe he would suspect her identity as his wife, and declare his suspicions to her? She would wait long for such a declaration, he thought; when it comes, it will come from her. But, indeed, judging from her appearance, it seemed that she neither expected nor suspected anything. She walked calmly by his side, stooping to twist from its stem some flower that hung in her path, replying to his remarks, uttering the well-attuned laugh that sometimes parted her lips. In all she was discreet, irreproachable, and Branwell left her and returned to the library, frustrated as always, and yet when alone his doubts again returning.

He sat down with the picture again in his hands, fascinated, repelled by the destiny so dimly opening before him.

Thus the night passed—the night that was the link that bound a strange past with a future that held in its hours a happiness and a misery he could not guess.

THE WOMAN QUESTION.

A survey of the States of the Union, and of the Union under the general government, will show to any candid observer that the legislation of the country, in all its departments, is above, rather than below, the average moral sense of the nation. The fact is seen in the inadequate execution of the laws. There are many statutes relating to public morals and

civil policy which appear to be the offspring of the highest and purest principles, that stand as dead letters in State and national law, simply because the average moral sense of the people does not demand and enforce their execution. They are enacted through the influence or by the power of men of exceptional virtue, who find, to their sorrow, that while it is easy to make good laws, it is difficult, and often impossible to execute them. So far as we know, it has never occured to them to call for the assistance of women in the execution of these laws, nor has it occurred to women to offer their assistance to them for this end. One or two questions, suggested by the discussions of the time, naturally grow out of this statement:

First.—Is it of any practical advantage to have better laws, until the average morality of the people is sufficient to execute those which we have?

Second.—Is it right that women should have an equal or a determing voice in the enactment of laws which they do not propose to execute, which they do not propose to assist in executing, which they could not execute if they would, and which they expect men to execute for them?

Third.—Supposing that women would give us better laws than we have (which is not evident,) what would be the practical advantage to them or to us, so long as they must rely upon us to execute them—upon us, who find it impossible to enforce our own laws, some of the best of which are the outgrowth of the pure influence of women in home and social life?

In natural and international life there are policies of action and attitude to be adopted and maintained. These policies sometimes cost a civil war for their establishment or defence, and, not unfrequently, a war with related nations. It so happens, in the nature of the case, that no single nation has it in its power to abolish war. The only way for a nation to live, when attacked by foes within or without, is to fight; and, in the present condition of the world, a national policy which has not behind it the power of physical defence is as weak and contemptible a thing as the world holds. Out of this statement, which we presume no one will dispute, there arise two questions:

First.—Would a lack of all personal risk and responsibility, on the part of those delegated to establish and pronounce the policy of a nation, tend to prudent counsels and careful decisions?

Second.—Is it right—is it kind and courteous to men—for women to demand an equal or a determining voice in the establishment of a national policy which they do not propose to defend, which they do not propose to assist in defending, which they could not defend if they would, and which they expect men to defend for them?—*Dr. Holland, in Scribner's Monthly.*

THE PRINTER-FARMER.

As a politician and a candidate for the Presidency, we have nothing to say of Horace Greeley. Partisanship is not in our line of duty; but in Horace Greeley as one of our great self-made men—printer, editor, farmer—we, in common with all our readers, feel a deep interest, and for that reason the following poetic tribute, sent us by a friend of his and ours, is here inserted with full confidence that it will be properly appreciated:

THE WHITE-HAIRED BOY.

(AIR—*The Minstrel Boy to the War hath Gone.*)

The white-haired boy hath left the farm;
On the great highway you'll find him,
Trudging along with a heart as light
As the pack that is slung behind him.
Young soldier of life, thy way is long,
And the road lies dusty before thee,
But thy heart is stout and thy faith is strong,
And "the lions" will quail before thee!

The white-haired boy to the city hath come,
'Mid printers and types you'll find him,
But never a bit of tobacco or rum
On the box that stands behind him.
The white haired boy with his farmer-fare,
His bread and his milk beside him,
And plenty of work on his printer's case
Recks little what may betide him.

Oh, white-haired boy there is work for thee;
Hard work for thy soul's endeavor;
But thy *faith in man* and thy TRUST IN GOD
Will carry thee on forever!
And the battle of life the white-haired boy,
Hath nobly fought *and won it;*
And when North and South "CLASP HANDS" again,
'Tis the white-haired boy who has done it.

A FEW HEALTH RULES.

Mrs. M. E. Wilson, in the *Plantation*, gives the following set of rules for the guidance of her lady readers:

1. Walk in the open air, breathing deep and long, always with the mouth closed.

2. Never sit, stand or lie in a current of air when you are fatigued or warm.

3. Never go to sleep without some covering over your feet and lower limbs.

4. Never expose any part of your body unaccustomed to exposure by a change in your dress.

5. Never go out of a crowded or warm room, in the open air, without a shawl or other wrapper around you.

For our Young Folks.

ONLY A BOY.

Only a boy, with his noise and fun,
The veriest mystery under the sun;
As brimful of mischief, and wit and glee,
As ever a human frame can be,
And as hard to manage as—what? ah me!
'Tis hard to tell,
Yet we love him well.

Only a boy, with his fearless tread,
Who cannot be driven, must be led;
Who troubles the neighbors' dogs and cats,
And tears more clothes, and spoils more hats,
Loses more kites, and tops, and bats,
Than would stock a store
For a year or more.

Only a boy, with his wild, strange ways,
With his idle hours, or his busy days;
With his queer remarks and his quaint replies,
Sometimes foolish, sometimes wise,
Often brilliant for one of his size,
As a meteor hurled
From the planet world.

Only a boy, who shall be a man,
If nature goes on with her first great plan;
If intemperance, or some fatal snare,
Conspires not to rob us of this our heir,
Our blessing, our trouble, our rest and our care,
Our torment, our joy,
"Only a Boy!"

THE KING AND THE COUNTRYMAN.

In the days of the good King Henry IV. of France, there lived an honest countryman, who said one evening, on returning from his day's work, "Well, good wife, I hear our good king is coming to-morrow to hunt in the forest of Fontainebleau. The distance is great, I know; but, if you will get ready my best coat and hat, I am resolved to try and see him." His wife soon made ready his best clothes, and, at daybreak, she gathered a basket of her best strawberries, and tied up one of her choicest cheeses, as a present to the good king; and Pierre set off with eager step and joyful heart. He walked on in the fresh morning air; but when he reached the forest, being overcome by fatigue, he sat down to rest awhile. Now, it chanced that during the hunt the king lost sight of his companions, and happened to be passing by.

"Can you tell me," said Pierre, "whether our good King Henry is in the forest to-day?"

"Yes," said the king, "he is here."

"I have walked some distance to see him. Can you tell me, sir, in what part of the forest I shall find him?"

"If you will mount behind me, I can take you to the very spot."

Thereupon, with many thanks, Pierre seated himself, right glad, behind the king. They rode along chatting very pleasantly.

"What have you in your basket, my friend?"

"Some strawberries, which my good wife sent with this cheese."

"Let me see the strawberries."

Pierre handed him the basket, and watched him anxiously eating one after another, fearing there would be none left. However, he said nothing.

"How shall I know the king from his courtiers?"

"Oh, very easily; they will all take off their hats, but the king will keep his head covered."

Very soon they came to four cross-roads, where a very large company of gentlemen were gathered together awaiting the king. As soon as he appeared they all took off their hats; and Pierre asked, eagerly, which was the king.

"Did I not tell you he would keep his hat on?"

"Well, then, either you or I must be king, since all the rest are bareheaded,"—little suspecting how close he was to his majesty.

"'Tis even so; and I am Henry IV. of France."

In great astonishment Pierre hastily dismounted, wondering how he could have been riding and talking with him in so friendly a manner. The king smiled, and told him to go to the palace for some refreshment and rest; and that he wished to see him next morning. Meanwhile the king ordered a beautiful cow to be tied up in the yard; and the next day he told Pierre to drive her home to his wife, for the refreshing basket of strawberries and the cheese which she had sent him.

Pierre's joy was great, when he told his wife his adventure in the forest; and hers was no less, when she beheld the beautiful cow which the good king had sent to her.—*From Oliver Optic's Magazine.*

A farmer, whose cribs were full of corn, was accustomed to pray that the wants of the needy might be supplied; but when any one in needy circumstances asked for a little of his corn, he said that he had none to spare. One day, after hearing his father pray for the poor and needy, his little son said to him:

"Father, I wish I had your corn."

"Why, my son, what could you do with it?" asked the father. The child replied, "I would answer your prayers."

A little boy was sent to the store for some eggs. Before reaching home he dropped them. In answer to his mother who asked, "Did you break any?" he replied, "No, I didn't break any, but the shells came off some of them."

Physical Culture.

DELICATE WOMEN.

If there be any women among our readers to whom the foregoing phrase, in the sense in which it is here used, does not properly apply, we will willingly excuse them from reading further. We trust there are a few, at least, and we would gladly believe that there are many. That the "delicate" ones are numerous enough, and their condition sad enough to awaken the sympathy of every one who loves and reveres the sex, alas! we know to be too true. If any words of ours, or of others better qualified to advise and instruct them, can be of use to such ones, they shall not be withheld.

That woman should be delicate in the higher and better senses of the word is very true. She is naturally finer and more exquisite in formation or structure than man, more free from grossness and more refined. This delicacy is consistent with the highest health, and the most vigorous physical and mental activity. But by "delicate women," we need hardly explain that we here mean what is generally implied in the term—tender, weak, sickly—without power of endurance.

There is a morbid sentimentality prevailing to a large extent among the ladies—young ladies particularly—which causes them to rather congratulate themselves on being slender, fragile, nervous and pale—in plain American-English, *sick*. It was that miserable misanthrope Lord Byron, we believe, who wrote :

"There's a sweetness in woman's decay,"

and thousands seem to have adopted the detestible sentiment as not merely poetry but truth.

Well, the first thing to be done is to get rid of the absurd notion that it is a fine thing to be "delicate," and that high health and vital stamina are vulgar. It would be useless to talk of the means of getting well to one who prefers to be sick.

Why have we so many women among us, both in the city and country, who are described as "in delicate health?" This condition of things is not universal. It is mainly an American peculiarity. "Your ladies," Frederica Bremer said, when in this country, "are very beautiful, but so pale." Why are women, here, less healthy than men? Health is the normal condition of both sexes—of the one as much as of the other. Mary has not necessarily inherited any greater tendency to headache or a permanent pain in the back, than John. She is as fully entitled to red lips and a healthful, peachy bloom on the cheek, as her brother. Why is she pale, nervous and dyspeptic, while he is so ruddy and so utterly unconscious of stomach and nerves alike? Is nature in fault, or are we? May there not be something radically wrong in our systems of education and home training, as applied to girls, and in the habits which we permit and encourage in the female portion of our households?

We intend to make these questions a text for future articles. In the meantime we hope they will suggest in the minds of our fair readers, and of their fathers, brothers and husbands, certain possible answers.

SUNDAY DINNERS.

A Sunday's dinner, Dr. Hall says, is made the most sumptuous meal of the week in a great many households, and the guests retire from the table more like gorged anacondas than intellectual human beings, with the result that during the whole afternoon there is such an amount of mental, physical and religious sleepiness, if not actual stupidity that no duties whatever are performed with alacrity, efficiency and acceptableness. The Sunday dinner made of a cup of hot tea, some bread and butter, with a slice of cold meat and absolutely nothing else, would be wiser and better for all; it would give the servants more leisure; the appetite would be as completely satisfied half an hour afterwards, while body, brain and heart would be in a fitting condition to perform the duties of the Sabbath with pleasure to ourselves, and greater efficiency to others, and doubtless with larger acceptance to Him toward whom all our service is due.

THE WARM BATH FOR CHILDREN.

A physician, in a very sensible article upon bathing, says: "For the wind in the stomach children are thought to have, for their tiresome crying and for the restlessness and worrying at night with which they are afflicted, if the warm bath were resorted to oftener and the dosing of soothing syrups and worse nostrums less it would be better for the children."

Keep a window or door open in your bedroom day and night.

Domestic Economy.

NEGLECTED GOOD THINGS.

Our people are quite too negligent of the *little* great comforts within their reach. The cray or crawfish, is decidedly the highest flavored of all the shell fish, and can be eaten either simply boiled or broiled, picked and stewed, with seasoning according to taste.

Another most palatable dish is the *frog*—not the *toad*—the former living only in the water, the latter only on the land. They are much superior to any chicken, and their only fault is that they are so hard to catch.

The most palatable dish of soup that, in all my travels, I have ever eaten is the *Purée à la Bisque*, or crayfish soup, and the best meal-dish, crayfish plain boiled at night for supper, and the rest served the next day, stewed, and with a few of the claws thrown in for flavoring. This was thirty-six years ago, so you may imagine what an impression it must have made upon my palate, that I should so vividly remember it at this time.

As a planter, I always made it my *first* consideration to provide an abundance of the good things of this world for my family, and afterwards make as large crops as I could. When I did not make butter enough, my family had to go without it, and the same with regard to bacon, so that a season of privation of either was always followed by extra exertion, and an abundance.

Although times have changed, and I can no longer say to one servant go, and he goeth; nor to another do this, and he doeth it; yet by my own labor I manage, out of my garden, to furnish my family with an abundant supply of the most palatable and wholesome vegetables, and out of the river an equally abundant supply of each kind of fish in its season; and I am fast approaching my three score and ten. I mention this in order to incite younger and stronger men to provide properly, first and foremost, for their families, and then go ahead and make the largest crops to sell that they can. C.

HOUSEHOLD NOTES.

A New Dish from Tanyah.

We have given, we think, in a previous volume, some recipes for cooking that peculiar Low Country vegetable, the Tanyah root, well known along the South Atlantic and Gulf coast, and generally highly esteemed by natives of this region, but not liked, at first, by strangers. We like the root very much, but have lately learned (what some of our readers may have long known, perhaps) that the most delicious part of the plant is the large succulent leaf-stalk. The blanched parts of the inner ones are to be used, or the plant may be earthed up, like celery, when the whole, so far as covered, becomes edible. To cook, cut these blanched stems into short pieces; put them into a saucepan with cold water and bring to a boil; pour the water off, to get rid of the acridity which pertains to this plant, in common with the other members of the Arum family; add more water and a little salt and cook till tender. Serve with butter, like asparagus; or the pieces (not cooked too soft) may be dipped in an egg-batter and fried. Try it.

Domestic Labor.

In reply to a Southern correspondent who desires to get Chinese servants for house duties, the agricultural editor of the *World* declines to recommend them and suggests, for the more northern portions of the Southern States, the Swedes. He adds:

We were lately travelling in New England and stopped at a farmer's house in a village. We saw no servants; there were none. Day after day our bed was well made up and the meals were simply superbly-cooked, yet every evening there were in the parlor two of the prettiest, neatest looking girls one's eyes ever fall on, and also a matronly mother, who never, day or evening, seemed to have anything to do but knit. We know that many a noble girl in the South has taken the cares of the house in her hands, even to the washing, who never knew what the slightest labor was in the days agone. We look upon such with a reverence akin to that belonging to deity. They will be the healthier and richer for it, but it requires a nerve and moral courage few possess to undertake such labor. Then, there are hundreds not physically able.

How to Cook Japan Peas.

Many of our readers have raised Japan Peas this season, and there is danger that this richest and best of the legumes will get a bad reputation, as an article of human food, and be voted "fit only for mules and hogs" (as a friend of ours characterized it the other day) simply for want of a little information in re-

gard to the proper mode of preparing it for the table. The peas are used both green and dry. When green, they may be cooked and served in the same way as "butter beans," but require a longer time to boil. When dry, they must be soaked at least twelve hours before commencing to cook them; then boil in soft water, (adding no salt at first,) till properly done, which takes, we think, about three hours; or, still better, partly cook them by boiling and then put them into a suitable deep pan, with a piece of meat, and bake after the fashion of Yankee "baked beans." We think them good enough for a king or—a farmer.

Recipes for Cooking.

Cook books and collections of recipes alone will never make good cooks. There is always much to be learned by patient, persevering practice. Recipes are useful in their place, but they do not stand in lieu of good sense and judgment. A certain combination of ingredients and a given mode of preparation, which may exactly suit one housekeeper, may not meet the wants of another, and yet may suggest just what the latter requires. Consult recipes, but do not consider yourself obliged to follow them, to the letter. Modify as circumstances may require and improve them if you can. Cooking is a science and an art. It is a pity it is not taught, as such, in schools.

Hard and Soft Water.

For extracting the juices of meat, to make a broth or soup, soft water should be used and no salt should be added till the cooking is well advanced. The same rule applies to cooking beans and peas, which will not boil tender in hard water. Onions are best cooked in hard or salted water, so is meat when the juices are to be retained, as in ordinary boiling; and the meat should not be put in till the water is at the boiling point.

Two Hints on Coffee.

1. Never decant it, but bring to the table—in the pot in which it is made. When hot coffee is emptied from one vessel into another, the kitchen ceiling generally receives that essence-laden vapor which should have found its way into the cups on the breakfast table.

2. When the coffee enters the cups it should find the milk or the cream already there.

RECIPES.

Curing Meat.—The *Germantown Telegraph* (very good authority in such matters) gives the following recipe for curing meat:

To one gallon of water, take one and one-half lbs. of salt, one-half lb. of sugar, one-half oz. of saltpetre, one-half oz. of potash. In this ratio the pickle can be increased to any quantity desired. Let these be boiled together until all the dirt from the sugar raises to the top and is skimmed off. Then throw it into a tub to cool, and when cold, pour it over your beef or pork to remain the usual time, say four or five weeks. The meat must be well covered with pickle, and should not be put down for at least two days after killing, during which time it should be slightly sprinkled with powdered saltpetre, which removes all the surface-blood, &c., leaving the meat fresh and clean. Some omit boiling the pickle, and find it to answer well, though the operation of boiling purifies the pickle by throwing off the dirt always to be found in salt and sugar.

Dr. Kitchener's Salad Recipe.—Boil a couple of eggs for twelve minutes, and put them in a basin of cold water for a few minutes. The yolks must be quite cold and hard, or they will not incorporate with the ingredients. Rub them through a sieve with a wooden spoon, and mix them with a tablespoonful of cream; then add two tablespoonfuls of oil. When these are well mixed, add by degrees a teaspoonful each of salt and powdered lump sugar, and the same of made mustard; when these are smoothly united, add very gradually three tablespoonfuls of vinegar; rub it with the other ingredients till thoroughly incorporated with them; cut up the white of the egg, and garnish the top of the salad with it. Let the sauce remain at the bottom of the bowl, and do not stir up the salad till it is to be eaten.

Bread Pudding.—Toast slices of bread; butter them and break them up in small pieces into a suitable pan; pour upon them boiling milk, a little more than they will take up when fully saturated; add as many eggs as you had slices of bread, a little salt and a little nutmeg or cinnamon and bake till brown on the top.

Sweet Potato Bread.—Take one cup of mashed sweet potatoes, one cup of corn meal, one cup of flour, one cup of milk, two eggs, one teaspoonful of salt, two teaspoonfuls of baking powder; mix quickly, and if two stiff add more milk; bake in a hot oven.

Notes and Memoranda.

LITERARY NOTES.

The leading attraction in *Scribner's Monthly*, for the ensuing year, will be a new serial story by Dr. J. G. Holland, entitled "Arthur Bonnicastle," commenced in the November number. The author's name is a sufficient guarantee of its interest. It will be beautifully illustrated by Miss Hallock. In the November number Dr. Holland has also a noticable article in defence of Pere Hyacinth's recent marriage. *Scribner's Monthly* is, undoubtedly, the best popular and family magazine in America—we might say in the world. [New York, Scribner & Co.; $4 a year.]

F. G. DeFontaine is editing "A Cyclopædia of the Best Thoughts of Charles Dickens," which proposes to quote the beautiful, the pathetic, humorous, or otherwise notable passages from this author's works, placing them under appropriate heads and arranging in alphabetical order. It is to be issued in six numbers, by E. J. Hale & Son, New York. We have received the first and second numbers. It is handsomely printed on tinted paper. [Price $1 50 for the six numbers.]

The *Atlantic Monthly*, for November, in addition to continuations of "The Poet at the Breakfast Table," Parton's "Jefferson," "Guest's Confession," (by Henry James, Jr.,) and De Mille's "Comedy of Terrors," has several very noteworthy articles, among the best of which is "The Primeval Ghost World," by John Fiske, and two or three fine Poems. [Boston, Jas. R. Osgood & Co.; $4 a year.]

Readers who were boys twenty years ago, will recall with delight, as among the pleasant sensations of those days, the perusal of Dr. Mayo's "Kaloolah," and those who are boys now will be glad to know that G. P. Putnam & Sons have issued a new edition of that attractive tale of love and adventure.

"Stories and Poems," by Mrs. Caroline Gilman, and her daughter, Mrs. Caroline Howard Jervey, of Charleston, is an attractive book for the young, containing many excellent and well told stories illustrative of Southern life and manners, and some poems of more than ordinary merit. Messrs. Lee & Shepard, Boston, are the publishers.

Christian Reid's new novel "Ebb Tide," though not considered her best work, affords a good specimen of her admirable style and method. The scene opens in Charleston, but is afterwards transferred to the West Indies and to Europe.

"The Romance of American History," by Prof. Schele de Vere, comprises a series of papers on such subjects as the "Discovery of the Mississippi," "The Story of Pocahontas," etc. [Putnam & Co., New York.]

"Dr. Vandyke," is the title of Esten Cooke's new picturesque romance of colonial life in Virginia. The story is well told, and full of dramatic interest.

Elizabeth Stuart Phelps is to begin the story of "One Little Women," in the November number of *Our Young Folks.*

SCIENTIFIC MEMORANDA.

Nature of Ague Poison.

M. P. Bolestra has communicated to the French Academy some observations on ague poison. He says that in examining marsh water he always finds, in proportion to its degree of putrefaction, a granular microphyte somewhat resembling in form the *Cactus Peruvianus.* This plant grows on the surface of the water; when young, it is rainbow-like in tints, and looks like spots of oil. At the low temperature of cellars and in water containing no vegetation, it develop slowly, but in contact with air and exposed to solar rays in the presence of decomposing vegetation, it grows fast, disengaging small gas bubbles. A few drops of arsenious acid, sulphite of soda, or still better, neutral sulphite of quinine, stops its vegetation at the surface of the water. M. Bolestra states that these spores can be found in marsh air. He caught agues twice during his researches.

Sulphide of Potassium for Insects.

According to Schmidt, an excellent remedy against caterpillars consists in a dilute solution (1 part in 500) of sulphide of potassium,

the infested tree being sprinkled with this substance by means of a small hand-syringe. This method has been used on a large scale in France, and, it is said, without any injury to vegetation.

MERE MENTION.

We had the pleasure of receiving from our friend J. L. Dove, Dove's Depot, S. C., a box of very fine domestic grapes. A sample was sent us each of the Tender Pulp and Sugar Grape, raised from plants from Ellis & Co., Whiteville, N. C. Messrs. E. & Co. say of them: "The Tender Pulp and Sugar Grape are both natives of Columbus County, N. C., and have already taken their places beside the other varities for wine and the table. The Sugar commences ripening in August, and continues to bear and ripen till stayed by frost. The Tender Pulp ripens with the Scuppernong and Thomas, and yields about the same." We cannot vouch for their wine making qualities, but for their delicious taste, and their suitableness for the table, we can heartily recommend them.

——Mr. Dreer informs us in a private note, now before us, that he has removed his entire greenhouse department to his nursery and seed farm at Riverton, N. J., "where," he adds, "I hope some day to have the pleasure of showing you what I am doing. I have now twelve houses, each one hundred feet long, ranging from twenty-five to twelve feet in width, all heated with hot water, for growing plants, and still not enough to supply the increasing demand." We are glad to learn of his prosperity, and the more so because we believe it has been won by honest and liberal dealing.

——The *Plantation*, (Atlanta, Ga.,) has been changed to a monthly of the regular magazine form, and makes a much handsomer appearance than before. It has long been one of the best among our many excellent exchanges, and it is not likely to deteriorate under its present management. [Plantation Publishing Company; $1 50 a year.]

——A colony has been organized at Cleveland, Ohio, to settle in North Alabama, not far from the new city of Birmingham, in the Warrior River Coal and Iron Fields, at a place to be called South Lowell.

——Gen. E. P. Alexander, formerly Chief of Artillery in Longstreet's Corps in Northern Virginia, has been elected President of the Savannah and Memphis Railroad, *vice* Col. W. L. Salisbury, resigned.

——*Household Treasure* is the name of a tasteful and lively literary and family paper, published at Berea, Ohio. [T. L. White & Co.; 75 cents a year.]

——It is said, but we know not on what authority, that a tea made of peach leaves is a sure cure for a kidney difficulty.

——Three Texas gentlemen have made arrangements for enclosing 115,000 acres of land in one body for pasturage.

CATALOGUES AND PAMPHLETS.

"Catalogue of Dutch Bulbs and Flower Roots" and "Catalogue (wholesale) of Fruit and Ornamental Trees and Shrubs;" John Saul, Washington, D. C.

"Catalogue of Ornamental Trees, Fruit Trees, Shrubs, Plants," etc.; S. B. Parsons & Sons, Flushing, L. I.

"Catalogue of Fruit and Ornamental Trees, Roses, Shrubs and Greenhouse and Hardy Plants;" T. B. Jenkins, Chambersburg, Pa.

"Catalogue of Fruit and Ornamental Trees, Shrubs, Vines and Roses;" Richardson & Vail, Geneva, N. Y.

"Catalogue of Atlanta Nurseries," (Fruit and Ornamental Trees, Shrubs, Vines, etc.) for 1872-3; Harden & Cole, Atlanta, Ga.

"Catalogue of Washington Nurseries" (Fruit, Ornamental and Greenhouse Departments); Graves, Selover, Willard & Co., Geneva, N. Y.

"Catalogue of Mount Hope Nurseries" (Fruit, Ornamental, Hardy and Greenhouse Plants, Bulbs, etc.); Ellwanger & Barry, Rochester, N. Y.

"Bulletin of the National Association of Wool Manufacturers for July and September, 1872;" John L. Hayes, Editor, Boston.

"Illustrated Manual of Swine and Swine Breeding;" Shephard & Alexander, Charleston, Ill.

"Songs of the Grange," set to Music, by C. A. Hall; National Grange, (O. H. Kelley, Sec.) Washington, D. C.

The Saunder's Raspberry.

THE

Rural Carolinian.

Progress with Prudence, Practice with Science.

D. H. JACQUES, EDITOR.

Vol. IV.] CHARLESTON, S. C., DECEMBER, 1872. [No. III.

Thoughts and Suggestions for the Month.

Making crops is not all of the farmer's life, or should not be all. The body must be fed and clothed, therefore we must make corn and cotton; but the mind and the heart should be improved as well as the soil, or our existence will be barren, and no mental harvest be garnered with its autumn days. Now is a good time to think of this, and to ask ourselves if we are giving sufficient attention to the higher ends of our being. Because one cultivates the ground, he need not grovel. His position is a proud one, and his character and attainments should correspond. He should be educated, refined, polite, upright and honorable; and every means of intellectual, social and moral culture within his reach should be laid hold of, and made subservient to his elevation in the scale of Christian civilization. No farmer's house should be without books, newspapers and magazines, and his reading, though it should embrace agriculture, should not be confined to that; and he should provide for the mental as well as the physical sustenance of his family. Now, also, is the time to organize farmers' clubs and Granges, and to perfect the workings of those already in existence, so as to get all the good out of them of which they are capable.

———We have no disposition to select either agricultural or miscellaneous books for our readers or to advise them, except in the most general terms, what to read. Tastes differ and so do the particular needs of individuals; but there are a few excellent works of comparatively recent publication to which we wish here to call attention as worthy to find a place on every farmer's book shelves. Among these are—"How Crops Grow" and "How Crops Feed," both by Professor S. W. Johnson, of Yale Scientific School; "New American Farm Book," by R. L. Allen and L. F. Allen, a new and enlarged edition of an old and excellent work; "American Cattle," by Lewis F. Allen, to which should be added, if possible, Low's "Domesticated Animals of the British Islands," an old standard work; "Practical Dairy Husbandry," by X. A. Willard, (for those who need a work on that subject) "Every Horse Owner's Cyclopedia," edited by Robert McClure, M. D.; "Ville's Chemical Manures," and, (not new but the best, perhaps, in its way); "Agricultu-

ral Chemistry," by Professor James F. W. Johnston. If a work on gardening be wanted, White's "Gardening for the South," or Ravenel's little "Southern Gardener" should be procured.

———But while the agriculturist should give himself leisure, at this season of the year, for reading, study and social recreation, he must not for a moment entertain the idea that he has time for idleness or aimless lounging about the country store or tavern. In our delightful climate, the winter furnishes the proper time for doing much of the heaviest work of the plantation or farm. Fence building, stump-pulling, ditching, and the general clearing up, of which there is always enough to be done, should be pushed energetically, so as not to stand in the way of the early preparation for the next season's crops. Above all, the fences must not be neglected. Some of the worst annoyances and heaviest losses to which the farmer is subjected result from inadequate fences; and, later in the season, when other work will press, it will be very difficult to give them the attention they require.

———In the fine climate of the Cotton States, cattle *exist* without shelter, and with little or no attention during the short mild winter, but it does not *pay* even here, to let them thus take care of themselves. All farm stock should be well fed and sheltered from inclement weather—they must be, if the best results are desired, or if we have any regard for the comfort of the animals entrusted to our care. "The merciful man is merciful to his beast," and he is either very unmerciful or very thoughtless, who allows his cattle to shiver with cold through the long and often stormy nights of winter, in the open field.

———The wise planter will not delay making his labor contracts for the next season, till the last moment. It is well, as far as possible, to keep the same hands from year to year, where they have conducted themselves properly and proved reasonably trustworthy. New hands will need some special training to adapt them to any peculiarities of management or working that you may have instituted. Straightforward dealing, firm guidance, fair wages, prompt payments, and close personal supervision, are among the means of ensuring success with our laborers.

———A few sheep on the farm is what almost every one can make pay, even where large flocks are out of the question. "What about the dogs and the freedmen? Don't they love mutton?" we shall be asked. Yes, and the latter are equally fond of bacon, but you, doubtless, contrive to keep a few hogs in spite of them; so, with a little attention, which it will pay to give, you can keep a few sheep. We do not deny that, in many parts of the country, there are obstacles in the way of keeping sheep, but they are, generally, much overrated.

———The profits of farming should consist, in a large measure, in the improvement of the farm itself and its belongings, and there can be no better investment than this. That is very poor farming, if worthy to be called farming, which, though it may nominally show a cash balance, leaves the homestead in a worse instead of a better condition than it found it.

Notes on Planting.

No. 1.

"The King, observing how ill I was clad, ordered a tailor to take my measure for a suit of clothes. This operator did his office after a different manner from those of his trade in Europe. He first took my altitude by a quadrant, and then with rule and compass described the outline of my whole body, all of which he put on paper; and in six days brought my clothes very ill made, by happening to mistake a figure in the calculation."—*Captain Gulliver's Voyage to Laputa.*

It is proposed in a series of articles to furnish some notes on planting, which may be of service to the beginner, and interest others by comparison with their own experience. They will go into detail in order to be practical; and if the style be somewhat *ex cathedra* it is to avoid circumlocution, and not from an assumption of superior knowledge or practice. The subject will be regarded purely as a money speculation, and to be regulated by mercantile considerations of profit and loss. The investment in land, live stock, machines, and current cash, will be considered. The employment and application of labor will then claim attention; and, after a glance at crops and their culture, some consideration will be given to the plantation record and the decisive test of the balance sheet. No attempt will be made to point out new channels of profitable effort to the Southern agriculturist. Whenever these are sufficiently indicated in the progress of events, they will, no doubt, be readily embraced. To the present practice is conceded the weight to which it is entitled by reason of its universality, for it is that of an intelligent and earnest class. The idea is retained that cotton should be our leading product for market; but the maxim is insisted on, and underlies all that follows, that *the plantation should be self-sustaining, and the cotton crop be nearly, if not quite, the exponent of profit.*

The circumstances that surround the Southern planter vary so much in the different sections, and differing soils that characterize the extensive area in which his lot is cast, that it is moreover necessary to localize whatever is said or written upon the subject of his pursuits; and the teachings of experience in one place have only value by approximation in another. Between the falls of the rivers and tide-water in South Carolina is the region of the long-leaved pine. The highlands are generally undulating enough to carry off surface water without gullying; and the wide swamps that border the streams are almost without exception too low for profitable reclamation with our dearth of capital and comparatively sparse population. There are also isolated ponds, some wooded and some open, as well as flats on every tract of any size, which, according to locality and soil, may or may not be profitably drained and cultivated. The soil of the highlands is sandy, and its comparative value depends on the approach of the clay subsoil to the surface. When this is sufficiently near, and a freshly ploughed field has a yellow tinge, it is known as "Mulatto" land, and is a free and generous soil; not very fertile originally, but admitting of the highest improvement, and giving better returns from commercial fertilizers than the stiff clays nearer the mountains. In health, facilities of transportation, and especially in freedom from vicissitudes of seasons this region compares favorably with other sections.

On any one plantation may be grown every Southern staple that is planted, and all of the cereals, while the soil seems specially adapted to the root crops. Cotton, Rice, Tobacco, Sugar-cane and Indigo; Corn, Wheat, Rye, Barley, Oats, Peas and Millet; Potatoes, Turnips, and the Ground-nut, all are or may be planted. The artificial grasses have not been tried, and it is probable that only special kinds would succeed; but there are some valuable natural grasses, and the various soiling crops are cultivated with facility. Garden vegetables of almost every variety, together with the fruits of the temperate and many of those of the tropic zone, are successfully cultivated. Here the white man can, and does with impunity, engage in field labor the year round; and the negro finds something congenial in its easily worked soil and mild climate, while it is not yet sufficiently tropical to permit him to lapse into savage indolence over spontaneous production and a wealth of fish and game.

This region covers perhaps a third of the area of South Carolina, and predominates in many of the Southern States. In it we will locate our plantation; and, without further preface, proceed to the consideration of the most important item in the Planter's investment.

THE LAND.

The soil is light and easily worked, and lands are cheap. Economy, therefore, does not generally dictate "high farming," the largest production upon the smallest area, which can only be accomplished by an increased expenditure of capital, thus enlarging our interest-bearing investment beyond the employment of more land to accomplish equal results. Where the lands are not already owned, and are to be purchased, or where there is some local scarcity of labor for regular farm-work, high farming may receive favorable consideration. But under the ordinary circumstances in which the planter is here placed, a good practical arrangement is a three field rotation, cotton, cereals and fallow, for the main plantation and a sufficiency of lots (or small fields) around the farmstead to be highly manured and kept in constant cultivation in the smaller crops. To this must be added land enough in permanent pasture and forrest for the purposes of the place.

In these soils the ordinary mule can well cultivate with the plough thirty-two or three acres, beside putting in ten acres of small grain, when oxen relieve him in part of the teaming, and the ginning is done by steam or water power. Taking this *datum* there should be in the principal fields sixty acres per mule, of which one-third should be in cotton, one-third in corn, oats, and seed patches of barley and rye, and one-third in fallow. Two or three acres per mule in the small fields near the farmstead are abundant for small grain for grazing, soiling crops, potatoes, &c. Fifteen acres in forests, ordinarily well timbered will be sufficient, and ten acres in permanent pasture will not be too much, in its natural conditions, for even the small number of stock proposed to be kept, per mule. This will give us for each mule to be worked eighty-eight acres (88) beside such waste land—unreclaimed swamp and undrained ponds—as every tract is more or less encumbered with. All beyond this is dead capital in which no investment should be made; or if already possessed the proprietor should at once separate it on his Plantation Book, and opening an account with himself as land speculator utilize this excess by sale or rent; and

failing, determine how long his general circumstances will permit him to carry the burthen before abandoning it to the tax gatherer.

Experience has shown that cotton does best after a weed fallow, and that the cereals succeeding cotton are greatly benefitted by the tilth in which the land is left from the thorough cultivation exacted by that crop. The weed fallow every third year also destroys the crop grasses produced by the two previous crops, and economizes labor, it is believed, in the subsequent cultivation at least one-fourth. If this estimate approximates correctness, it requires but little calculation to show that the land in weeds is paying its full share of interest upon the general investment. This rotation will prevent the land from becoming impoverished, maintaining it fully at the condition of fertility in which it commenced. If moderately manured in each of the two years of cultivation, while the crops will be much increased, the land will improve from year to year. It is impracticable to make upon a cotton plantation compost enough to manure every thing that is planted; and, like every thing else that has value, compost may cost more than it is worth. The most careful attention should be given by the planter to its accumulation as a secondary product of stock. Beyond this it is thought he cannot go with profit. If he goes primarily into its manufacture, he will find it to cost more than its equivalent in commercial fertilizers; and that his pursuit will rapidly change from planting to stock raising. This, in itself, may or may not be a desirable thing; but the problem we are considering is profitable cotton planting. Again, the bulk and expense of transportation attending compost makes it desirable that its application should be at the nearest point to the farm yard. For our principal fields and crops, therefore, we must rely on commercial fertilizers and cotton seed as manure, and the compost heap must be applied to the lots near the farmstead. When there is an excess for this purpose, it is best to apply the remaining compost broadcast on the poorer spots of the nearest principal field, so as at once to bring these spots up to the average. The planting and turning under of green crops should also annually be had recourse to upon thin spots and exceptional fields. Time cannot be had for more.

The flats alluded to as requiring drainage will almost always repay the cost of reducing them to cultivation. The ponds are more uncertain. When there is three or four inches of black earth overlying the retentive clay substratum, or when the underlying clay is red or streaked with red, thorough drainage will pay. Draining these places will also improve the adjacent highlands to a distance scarcely credible, by one who has not observed it, making them fit for the plough two weeks earlier in a wet spring. It is, therefore, recommended to drain them all when lying within the cultivated limits of the plantation, except when a pond will be more valuable as a stock-pool. Ditching, however, is expensive to begin with, and requires an annual outlay to keep it in order. The plantation should therefore be ditched upon a system carefully devised, and after the surveyor's level and rod has done its office. Generally these ponds and flats will be found to lie in a series, declining from one to the other toward some stream; and indeed the intermediate land will show evidences of overflow at some former period of high water. This will indicate the direction, meandering though it may be, of the main open ditch. The secondary ditches, to complete the drainage of each pond or flat through or near which the

main ditch passes, are covered or open as circumstances require. A good covered ditch is made with three lightwood rails of six or seven inches diameter, placed in a flat bottom and so as to have a triangular cross section. Cover with a foot of pine straw and tramp back the earth.

In covered ditches it is absolutely essential that the grade of the bottom should be the same from end to end; and they should debouch into the open ditch six inches above the bottom of the latter, so that they will not be choked by the accumulation of sand in the open ditch in the intervals of its annual cleaning. In open ditches the same uniformity of grade is desirable; for wherever the force of the current decreases obstructions will occur. Spring ditches to cut off the drainage from the highlands are frequently necessary; and the open ditches should not only be bridged when crossed by roads, but, also, at every two hundred yards through the fields, not only to give easy passage to laborers and teams, but to give crossings which the stock, when pasturing the fields, will use. Animals leaping ditches break the banks, and cost more in repairs than the bridges. Poles laid on lightwood sills make cheap and convenient bridges for the purpose.

In arranging the plantation the farmstead should, as nearly as possible, be in the centre, with the lots immediately surrounding it, and forest enough for fuel in the close vicinity. Next in propinquity should be the permanent pasture; then in point of distance should come the principal fields, and on the exterior lines should be the remaining forests from whence are to come the rails for fencing. This arrangement is dictated by the obvious policy of having the shortest lines on which to do the heaviest hauling, and of having the live stock under the closest supervision. The best possible shape for a plantation would be a circle, with the farmstead and adjacent lots in the centre, and with a line of fencing upon the circumference, and one other within and concentric. This would make but two divisions of the plantation. In the outer, the principal fields and rail forests would be contained; in the inner the permanent pasture and fuel forest. There would then be the least fencing and shortest transit to all points. Of course, no such shaped plantation can be obtained; but the suggestion illustrates the controlling idea in effecting the best arrangement practicable. The roads should be carefully laid out on the shortest distances, unless to avoid obstacles too expensive to be overcome. On the highland they should be made by ploughing on the sides and drawing to the centre; through flats and marshy places they should be ditched and causewayed. Fourteen feet is generally wide enough, and they should be regularly worked when needing it. Good plantation roads is an item of appreciable economy in saving the wear and tear of teams and expediting work.

There is one other matter to which, in this connection, attention should be called—the supply of water. At the farmstead and in the pasture it is indispensable; and at convenient points in the principal fields it effects no inconsiderable saving of time, and adds much to the comfort of laborers and stock. In some of our sultry summer days, one can readily appreciate why the Arab calls the place where shade and water is found paradise. Water for stock can generally be had in the natural ponds or frequent streamlets which characterize the country; and for the laborers can be had from springs dug out upon the hill-sides approaching the streams, or

from wells. These last are to be made with such facility that there is no excuse for the absence of water, either for stock or laborers, in whatever locality it is needed. Abundant and pure water can be reached anywhere at a depth of from fifteen to thirty-five feet, digging through a clay easily worked and most generally sufficiently firm to require no curbing.

In the next number will be concluded our notes upon the plantation itself by offering some suggestions as to fences, buildings, and the arrangement of the farmstead.

LOW MIDDLING.

Practical Hints to Young Farmers.*

Agriculture in its literal sense is the cultivation of the field. In its widest application, it includes the collection of the productions of the earth both by land and sea. Hence the hunter and fisherman are agriculturists, though they neither plough nor sow, but simply collect the spontaneous productions of the earth and convert them to useful purposes.

We shall, however, confine our attention to that kind of labor which has respect to the productions of the field, including the raising of animals and the production of fruit. These things seem to have a necessary connection, and must, to some extent, exist together. Indeed, industry, in our country, to produce prosperity must be deversified.

The producer of a single commodity, though his skill may be sharpened in that particular line by undivided attention, is, nevertheless, liable to disaster from the entire failure of that particular crop or a decline in its price. Whereas, if he had other crops, he might have a support to fall back on till he could reap another crop as his principal reliance. If we look back in the history of this art, we shall find that agriculture is co-eval with the existence of man on the face of the earth. That it originated by Divine appointment and that it reached a high degree of perfection in the most ancient nations of whose customs we have knowledge—as for instance in Egypt 3,500 years ago, and in Babylonia at a period probably more remote.

The vallies of the Nile and the Euphrates were both subjected to the art of irrigation as early as the days of Abraham, and yielded in great abundance such grains as were needful to sustain a dense population and cities of enormous size. Indeed cultivation is essential to sustain any considerable number of people. Wandering tribes of shepherds, herdsmen and hunters exhaust the natural productions of the soil and are able to provide only for an inconsiderable population. Babylonia, once literally teeming with people and abounding in wealth, is now able to sustain only a few half starved shepherds and robbers.

It was esteemed by the most intelligent Romans in the days of Augustus, a most desirable object to divert the minds of the people from the horrid practices of war to the peaceful avocations of rural life.

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* An essay read before Fishing Creek Grange, No. 34, Patrons of Husbandry, by Rev. Bro. J. H. Saye, and published by request of the Grange.

With a view to this, the talents of Virgil were called into requisition and he composed a treatise on husbandry which has stood the test of time and still stands unrivalled in beauty and grandeur. It is true he used the lights then extant and wove into his poems any amount of fable and mythology. His fables conveyed striking morals and his touches of mythology sparkled with resplendent beauties. This expedient was probably intended to attract the superstitious population, whose modes of thought he desired to influence and refine. But the old Romans had slaughtered the surrounding nations, and plundered their victims till they probably believed they had a right to oppress the defenceless and murder the innocent, whenever they stood in the way of their avaricious designs, and to rob whoever showed an unwillingness to surrender their treasures or services under the name of tribute. That which statesmen feared in the Augustan age presently came to pass. The iron sinews of the Roman were relaxed under the influence of the wealth which he acquired without honest toil and squandered in vicious indulgence. The body politic tore out its own vitals till it became an easy prey to the Northern hordes which poured down to enjoy the beautiful land adorned by the spoils of conquest and the arts of the highest culture. But whatever we may think of ancient art and glory, modern nations have eclipsed the ancients in those productions which build up society and make home desirable. These achievements have resulted from no single art or calling, but from a combination of all useful avocations.

Agriculture cannot flourish without manufactures, commerce and just laws. There must be an interchange of commodities among different nations. The raw material, as it comes from the hand of the producer, must be worked upon for use. The laborer must be protected in the enjoyment of the fruits of his toil, or he will have no heart to make effort.

The prosecution of agriculture implies capital. The farmer must have land for tillage, implements and animals adapted to his work, as also provisions for laborers, seed and surplus cash to meet contingencies. Having the necessary outfit, he is to consider the adaptation of his soil and climate for particular products, and how his surplus products can be exchanged or converted into cash to pay his laborers, and meet other expenses as well as to have a capital for the operations of the following year. The laws of nature are also to be carefully considered:

1st. As to the probability of a fruitful season. He must make a venture, for he cannot know beforehand what his farm will produce under conditions unknown, or what the state of the markets may be. He must, therefore, strike an average as to what wages he can promise his laborers, and how far he can afford to invest in other facilities for production, and yet be within the bounds of safety.

2d. He must regard the laws of nature as to the best time to plough and sow his seed, and what tillage a particular crop requires. The seasons, though uniform in the main, are still very different in many respects. Crops, like other things, must vary as circumstances vary.

3d. The farmer must regard the laws of nature in respect to the fertilizers he applies, and the manner and time of their application. Most of us pursue that course in this branch of our business which our observation and experience have

taught us is the best in our condition, yet if we looked a little deeper into the philosophy of things, we might work to better advantage; but, nevertheless, our main dependence is on the suggestions of common sense, observation and experiment. We might derive advantage from model farms, conducted on scientific principles, if they were within our reach; but, in their absence, we must glean from every quarter.

4th. The farmer must have respect to the laws of nature, in adopting that system of tillage which may result not only in immediate and profitable returns for labor performed, but which shall promote the permanent fertility of his farm. It is the worst species of prodigality to wear out a good plantation for the sake of a few good crops. It is a kind of robbery of posterity, very near akin to scuttling one's own ship in mid ocean. Now I am persuaded that it is practicable so to conduct farming operations that fields shall increase in fertility, and at the same time yield abundant harvests in proportion to the labor bestowed.

5th. The farmer should have in view the laws of nature in the removal or modification of what appears to be a diseased state of some portions of his soil. These portions show a want of fertility, either by absolute sterility, or the liability of crops growing on them to become diseased, or an exceeding proclivity to produce noxious weeds. Proper drainage often proves a remedy. Even hill-sides are benefitted by a proper system of ditching, not only for protection, but rendered more fertile. Much more may we expect benefit from the drainage of flat lands, on which water gathers from higher grounds, or rises from concealed fountains at the base of hills.

But another source of sterility, in what are called exhausted fields, is a want of a sufficient variety of the original earths. Clay, sand, magnesia and lime, are not in due proportion. One earth is in excess, the others not present in sufficient quantity to perform their functions. Metals are mingled with all earths. Some of these may be abundant, so that the field needs something to neutralize their evil tendency and convert them into fertilizers.

To illustrate this point, we may refer to fields on marl hills. These fields are, generally, very productive for a few crops, but then become almost sterile unless regularly supplied with an abundance of vegetable matter. In case they are bountifully fed with this matter they continue very productive.

But again we may refer to nature's crucible for the production of the best soils. These are generally found in alluvial formations, or in other words in lands which have been subject to inundations, or which are still overflowed, so as to leave deposits of earth and vegetable matter intermingled. This is the best species of soil which ordinarily falls under our observation.

But the deposits of long and great rivers may bring other elements of fertility unknown to our streams. As for instance the overflows of the Nile have kept up one of the most fertile territories on the earth for at least thirty-five centuries of the most intense productiveness. I am unable to tell the different formations through which the Nile flows, and of course the particular salts or earth intermingled with its waters. But we will look a little at a river flowing through a valley of equal

fertility in our own country and see what we may infer from the known conditions of that stream.

The Arkansas river rises in the Rocky Mountains, flows through the great American Desert, the Indian Territory, and through the State to which it gives its name. It is three hundred miles from where it enters the State of Arkansas to its junction with the Mississippi. The average width of what is called the Arkansas bottom is ten miles. The soil of this whole valley when sufficiently drained is unsurpassed in fertility.

This condition of soil is owing, as I suppose, to several facts. It has the common advantage of alluvial formations. The course of this river through the American Desert is in a bed of gypsum rock or Plaster of Paris, which is easily disintegrated and falls into the bed of the river. This stream, in common with others of like magnitude, rising among snow-clad mountains, has its annual floods. Upon an average once in ten years the floods are sufficient to cover the whole valley, which brings not only destruction to many farms, but a general upheaving and down setting of earths and things in general; but thereby a general distribution of soil, mixed with plaster, takes place. I need not state that Plaster of Paris is one of the quickest and most efficient fertilizers known to agriculture. Hence we may perceive how nature works to supply human wants by manipulating a soil superior to what art has yet reached, yet Plaster of Paris is completely sterile when alone, or the principal ingredient in any particular field.

As we never expect to see the Nile, or even plant in the valley of the Arkansas, but live and die by Fishing Creek, it becomes us to inquire what may be done here for our own good and the common weal.

We are farmers. Our plantations are spread over hills and valleys of primitive formation. Some of our fields have felt the scourgings of agricultural implements for a century. From the cheapness of lands but little care has been exercised for their preservation. The tendency of rolling lands to waste under careless management has reduced us to the necessity now of improving the soil or quitting the country. But this country is too good a place to be abandoned; the life of the farmer too joyous to be given up. Upon the whole we have a country exceedingly desirable; not the most fertile by nature, but all susceptible of a high state of cultivation. Really but little waste land, but a land abounding with living fountains and running streams of water.

The work of the farmer is, after all, the most desirable of occupations; though many in these days seem to dread the toil and sunshine incident to this calling. But it is the avocation in which the greatest number of men may prosper; it is indispensable to human society; it is the life of the greatest substantial enjoyment; it is really life at home.

And, perhaps, the most important consideration, comparatively, is, that it is the manner of life by which the human race is kept up. The dwellers in towns and cities must be replenished from time to time by recruits from the rural population, or there would be no growth of towns and cities, but perpetual decline. It is objected to life on plantations that the social principle is not cultivated and cannot be.

There is a mistake out on this subject. The rural people really enjoy more of social life than the dwellers in cities. The habits of city life are more artificial, generate more that is sensational, and tend to the enervation of true vigor and manhood. The quiet of country life is most favorable to reflection. The volume of nature invites to serious and profound meditation. The manly employments and bracing atmosphere develop the physical energies and the higher attributes of manhood.

That these are not mere surmises is apparent from those who have loved the country and found delight in the pursuits of agriculture. Washington was a farmer and prosecuted the business with all the ardor of his nature; Jefferson delighted in the retirement of Monticello; Webster had the same partiality for Marshfield; Calhoun was never so much at home and himself as when supervising matters at Fort Hill, and McDuffie experienced the same joy at the success of his efforts on his Cherry Hill plantation; Henry Clay delighted in his farm at Ashland. Ye farmer lads never blush for your calling, but rather that you stumble in the path trod by the most illustrious orators and statesmen of our country.*

[*To be concluded in the next number.*]

Underdraining for Profit and for Health†—I.

Whether underdraining will pay or not, as an agricultural improvement, depends upon circumstances, and in each case must be decided by the conditions therein existing; but where underdraining may be required to remove from the immediate vicinity of one's home, local causes of disease, and aid in securing healthful conditions for the family, the question of pecuniary profit need not be asked, and no expense within the limits of our means will be considered too great to be incurred. In any view of the case we are not called upon to make any apology for devoting considerable space in this and future numbers to this important subject.

WHAT LANDS REQUIRE DRAINING.

Colonel Waring, in the excellent little work which we make the text of our present remarks, very truly observes that "land which requires draining hangs out a sign of its condition, more or less clear, according to circumstances, but always unmistakable to the practical eye." The first thing to be done, then, is to determine whether or not, in a given case, draining is required. Colonel Waring gives this general rule: "All lands, of whatever texture or kind, in which the spaces between the particles of soil are filled with water, (whether from rain or springs,) within less than four feet of the surface of the ground, except during and imme-

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*We are sorry to be obliged to divide this excellent essay, but the pressure upon our columns this month compels us to do so.—Ed.

†1. "Draining for Profit and Draining for Health." By Geo. E. Waring, Jr. New York.
2. Munn's "Practical Land Drainer."
3. "Report of the Department of Agriculture for 1870."
4. Norton's "Elements of Agriculture."

diately after heavy rains, require draining." Going a little more into detail; we may add as conditions requiring this operation:

1. Where water has accumulated beneath the surface and originated springs;

2. Where, from the close nature of the substrata, it cannot pass freely downward, but accumulates and forms its level, or water-line, at a short distance below the surface, or, on hill-sides, where different strata crop out, oozes in various places, and saturates the soil at certain seasons;

3. Where, from the clayey or close texture of the soil, it lies on the surface and becomes stagnant; and

4. Where, in all land about dwellings and out-buildings, water will stand in post holes or little excavations during the winter and spring; as well as all stagnant pools and pond holes.

THE BENEFITS OF DRAINING.

The rain which falls upon a piece of land prepared with properly constructed covered drains never remains to stagnate or run over the surface, washing off the best of the soil, but sinks gradually down, yielding to the roots of plants any fertilizing matters which it may hold in solution. As it descends, air and consequently warmth follow it. Under these new influences the proper decompositions and preparation of compounds fit for the sustenance of plants go on, the soil is warm and sufficiently dry, and plants flourish which formerly would never grow on it in perfection, if at all. It is a curious fact, too, that such soils resist drought better than ever before. The reason is, that the plants are able to send their roots much farther down in search of food without finding anything hurtful. Every part being penetrated by the air, and consequently dryer and lighter, these soils do not bake in summer, but remain mellow and porous. Such effects cannot, in their full extent, be looked for in a stiff clay in a single season; the change must be gradual, but it is sure.

The principal benefits of underdraining are succinctly stated by a writer in the "*Annual Register of Rural Affairs*," in the following:

TEN REASONS FOR UNDERDRAINING.

1. It prevents water which falls from resting on or near the surface, and renders the soil dry enough to be worked or ploughed at all times.

2. By rendering the soil porous or spongy, it takes in water without flooding in time of rain, and gives it off again gradually in time of drought.

3. By preventing adhesion and assisting pulverization, it allows the roots to pass freely through all parts of the soil.

4. By facilitating the mixture of manure through the pulverized portions, it greatly increases its value and effect.

5. It allows water falling on the surface to pass downward, carrying with it any fertilizing substances (as carbonic acid and ammonia,) until they are arrested by the absorption of the soil.

6. It abstracts in a similar manner the heat contained in falling rains, thus warming the soil, the water discharged by drain-mouths being many degrees colder than ordinary rains.

7. The increased porosity of the soil renders it a more perfect non-conductor of heat, and the roots of plants are less injured by freezing in winter.

8. The same cause admits the entrance of air, facilitating the decomposition of enriching portions of the soil.

9. By admitting early ploughing, crops may be sown early, and an increased amount reaped in consequence.

10. It economises labor, by allowing the work to go on at all times, without interruption from surplus water in spring, or from a hard-baked soil in summer.

HOW TO DRAIN A FIELD—LAYING OUT DITCHES.

The accompanying diagram (Fig. 1) which we copy from the "Report of the Agricultural Department for 1870," represents a large field which was actually drained in the manner shown:

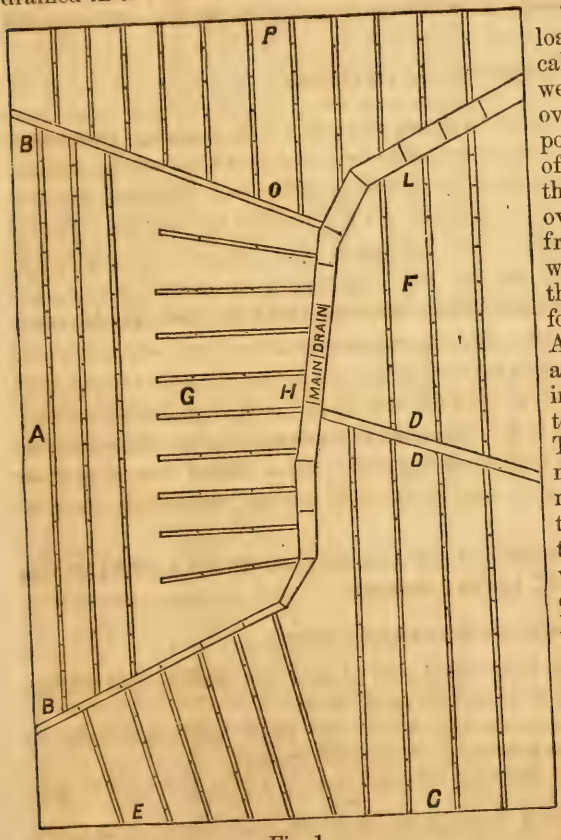

Fig. 1.

"The soil was a heavy clay loam, and the subsoil a retentive calcareous clay. The ditches were made about forty feet apart over the entire field. During a portion of the time a small stream of water that would all pass through a four-inch tile flowed over the surface in the valley from B to L, where a main ditch was sunk to a minimum depth of three feet, in which a course of four-inch egg-sole tiles was laid. As there was a valley at B O, and at D D, submains of three-inch tiles were laid as represented to connect with the main drain. The parallel ditches were then made up and down the slopes as nearly as practicable. From A the water would run most readily to B B. At G H short branches were made up the slope, in which one and a half-inch tiles were laid. At P O the ditches all ran directly up the slope. From F the water ran either toward the main L or sub-main D. From C the descent was more uniform toward D D. Hence parallel ditches were made as represented. The object in laying out the ditches in so many directions was to have them extend, as nearly as practicable, directly up and down the slopes, which is the true system of thorough underdraining. Intelligent tillers of the soil and engineers of extensive experience agree in this one point, that in a system of thorough underdraining it is better to have the ditches made up and down a slope rather than diagonally across it. Hence mains and sub-mains must be formed in the valleys, and parallels and branches should run up and down the slopes. Even when the strata crop out on the side of a slope, between which surplus water renders the soil too wet, it will always be found more satisfactory to cut the ditches up and down the slope, rather than in a diagonal direction across it."

THE MANNER OF DRAINING FROG PONDS AND "CAT HOLES."

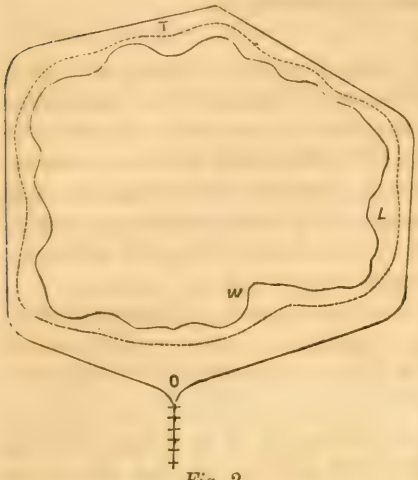

Fig. 2.

Our next diagram (Fig. 2) indicates the true manner of draining small ponds and low wet depressions on uplands. The irregular line W indicates high water mark. The dotted line L represents the extreme point occupied by the coarse, sour grasses which characterize permanently wet soil. O is the outlet of a tile drain, where it may be necessary to sink the main ditch four or five feet deep, in order to secure a proper descent from T to O on both sides of the wet ground. Generally such a place is thoroughly drained when the drain is completed entirely around it as shown; but the ditch must not be deeper in any other part than at the outlet. In occasional instances an additional ditch must be made directly through the pond to O. It is well to grade the entire ditch before laying any tiles, and then to let in the water at T, to test the descent. Ditches for draining ponds and swamps are often made too shallow. They should seldom if ever be less than two feet in depth. Generally one-inch tiles will be sufficient to carry off all the water which will collect around a small pond, but sometimes two inch tiles are required.

DRAINING A SLOPING OR HILL-SIDE FIELD.

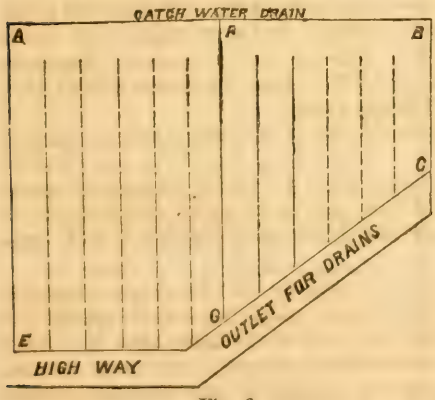

Fig. 3.

An irregular sloping field, previously kept wet most of the season by percolations from a swamp on a table land above, was thoroughly drained as shown in Fig. 3. "The first step toward draining that field was to sink a three-foot ditch, with a stoned throat, across the upper end from A to B, from B to C, and from A to E, letting the water discharge into a deep gutter at one side of the highway. As there was a low place at F, a ditch was sunk from F to G. The deep 'catch-water drain' across the upper end, from A to B, cuts off a large proportion of the water. Yet six or eight yards down the slope the water would soak out from the catch-water drain, rendering the soil on the lower side of the slope as wet as ever. It is probable, also, that the veins which conducted the water from the swamp to the lower part of the field were not yet reached by the catch-water drain AB. Hence other drains were made about forty feet apart, as shown by the dotted lines down the slope, ending four or five rods below the catch-water drain."

FARM STOCK.—Every possible effort should be made to improve the farm stock of all kinds. We do not urge this as a matter of fancy, but as a source of actual and immediate profit. Animals with thorough-bred crosses sell better everywhere and bring better prices.

Current Agricultural Literature.*

We have heretofore spoken favorably of Miss Howard's translation of Prof. Ville's Lectures, and commended the author's system to the attention of our readers. We have, also, cautioned them against adopting his theory as applicable, in detail, to our soils and the conditions under which agriculture is here necessarily conducted, so radically different from those of Europe. Studied thoughtfully and with due reference to all the modifying circumstances which must be taken account of in applying fertilizers to the different classes of soils found here, great advantage may be derived from the learned French farmer's experiments.

Prof. Ville's system is often spoken of as "High Farming without Manure," manure here meaning the dung of animals and other fertilizing materials usually gathered on the farm. The gist of his theory on this point is contained in the following extract:

In the past this proposition has attained the dignity of an axiom: that for successful culture we must have meadow, cattle and manure. Now, I affirm that this proposition is at once an economical and agricultural heresy.

The agriculturist who only uses manure wastes his lands. For from whence comes the manure? From its depths. The manure does not, then, in reality, repair the losses in phosphate of lime, potash, lime and azotic matter that the land is submitted to by the exportation of a part of its harvests. When we export meat, the loss is less than when we export grain, though there is always a loss. I repeat, then, this axiom, which, until now, has been made the basis, and, as it were, the palladium, of agricultural art, is in reality but an expedient. It has no right to be so but in the exceptional case where the meadow is watered by a stream of limestone water, which gives the soil the equivalent of what it loses in agents of fertility; but I repeat, this case is so rare it cannot be made a law.

I have said that a culture founded solely on the use of manure is also an enconomy without judgment.

Suppose the case of mediocre land, yielding from 11 to 14 bushels of wheat the acre; calculate how much time it would take you to bring it with manure to produce 39 to 43 bushels; you would recoil before the sacrifices this would draw you into.

With the chemical fertilizers the change is immediate, the progression sudden, and the benefit immediate also. Now, if you remark that besides the profit, the resources in straw are increased from the first year, is it not evident that, instead of first having meat to have grain, there is a manifest advantage in reversing the preconceived order and commencing by having grain—to gain a profit first, then straw, and lastly manure? I repeat, then, that we only cease to waste our land when we really import manures, and the solution imposed upon us by the force of circumstances is to raise the fertility of the soil by means of artificially-composed fertili-

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*1. Chemical Manures. Agricultural Lectures delivered at the Experimental Farm at Vincennes, in 1867. By George Ville. Translated by Miss E. L. Howard. Atlanta, Ga.: Plantation Publishing Company. 1871.

2. The School of Chemical Manures, or Elementary Principles in the Use of Fertilizing Agents. From the French of George Ville. By A. A. Fasquette, Chemist and Engineer. Philadelphia: Henry Carey Baird. 1872.

3. The Model Potato: an Exposition of the Cultivation of the Potato; the Causes of its Diseases; the Remedy, etc. By John McLaurin, M. D. With notes by R. T. Trall, M. D. New York: Samuel R. Wells. 1872.

zers, with the products existing in the form of mines in nature, and which seem to have been reserved to repair the depredations of the present as of the past, and to preserve us from the disasters of the future.

The "complete fertilizers" recommended by Professor Ville are composed of Acid Phosphate of Lime, Nitrate of Potash, Nitrate of Soda, Sulphate of Lime and Sulphate of Ammonia. For a rotation of Irish Potatoes, Wheat and Clover, for instance, this is the formula:

First Year—Irish Potatoes.

Complete fertilizer No. 3.....887 pounds.

Composition:	Quantity.	The acre. Price.
Acid Phosphate of Lime	355 lbs.	$ 5.57
Nitrate of Potash	266 "	15.70
Sulphate of Lime	266 "	.50
Expense		$21.77

Second Year—Wheat.

Sulphate of Ammonia	266 lbs.	$11.40

Third Year—Clover.

Incomplete fertilizer No. 2.....887 lbs.

Composition:		
Acid Phosphate of Lime	355 lbs.	$ 5.40
Nitrate of Potash	177 "	10.47
Sulphate of Lime	355 "	.67
Expense		$16.54

Fourth Year—Wheat.

Sulphate of Ammonia	266 lbs.	$11.40
Total expense		$61.11
Annual expense		$15.27

For Beets, Nitrate of Soda is added to the ingredients mentioned in the foregoing tables.

"The School of Chemical Manures" contains a very lucid exposition of the subject in the form of questions and answers, followed, in an appendix, by much useful information on preparing the soil and using fertilizers, with lists of formulas for manures for various crops.

The third work on our list, though sufficiently unlike the others in both matter and manner, is yet related to them in its radical departure from old methods and time honored agricultural doctrines.

Dr. McLaurin, introduces to us, for the first time, "Hygienic Agriculture," which, as it rejects animal manures, as nasty and one of the causes of disease and degeneracy in the potato and other plants, chimes in with the chemical theory of Prof. Ville. But according to our author, *cutting the seed* is the chief cause of the disease of the potato. This may or may not be correct, but the reasoning by analogy with true seeds, like peas or wheat, by which the doctor seeks to establish

his theory is most preposterous. Our Irish potato "sets" are simply root cuttings and in no proper sense seeds, and the "slips" or sprouts from these cuttings, taken off—removed entirely from the parent tuber—produce equally good crops and (other conditions being equal) equally healthy potatoes as are obtained from whole tubers.

In spite of some harmless vagaries and a good deal of amusing dogmatism, "The Model Potato" is a book worth reading, and contains many suggestive statements and useful hints.

The Banana as a Fibrous Plant.

Much has been written of the banana—the *musa* of the botanist—as a food producing plant, and it is certainly a most remarkable provision of nature, for the wants of the human family; not only on account of the great quantity of food which it affords, (being, according to "Humboldt," much beyond that of any known plant,) but for the very agreeable quality of its fruit, which requires no preparation to render it acceptable to the most fastidious palate; but little has been said as to its value as a *fibrous* plant.

I notice in some works, an allusion to the fibre contained in the *leaf*, but nothing is said concerning the stalk or body of the plant, which contains large quantities of the fibre, and of a much better quality than that in the leaves; extending the entire length of the stalk, which ranges from five to ten feet.

When properly cleaned, the fibre presents a beautiful silky lustre, very similar to that of the ramie, and would, doubtless, be of equal value to that or the pine apple silk, for manufacturing purposes. The fibre will certainly rank above the Sisal hemp, and other fibres of a like kind, which are so much used at this time; not only on account of its superior strength and beauty, but from its softness and elasticity. The stalks consist of a watery pulp, of a loose cellular structure, held together by the fibre, which permeates its entire substance in a longitudinal direction, and it only requires to be crushed by passing through iron rollers, and then dried by passing through a set of rubber rollers on wringers, when the loose powder, or pulp, can be whipped off by threshing, or simply passed beneath a revolving brush of stiff bristles, and the fibre is ready for packing into bales for shipment to the manufacturer.

A plantation of bananas, after once set out, will last for years, and requires less labor than almost any known crop, and at a distance of from four to five feet apart, will yield—certainly, in this climate, where we never have ice, or even *frost* sufficiently severe to seriously affect vegetation—from one to two thousand bunches of fruit *per acre*, and from one to two thousand pounds of clean fibre at the same time, which is worth certainly about twelve cents per pound, *in gold*, for manufacturing into ropes, etc.

I believe the subject to be well worth the serious consideration of our planters, who are disgusted with attempts to raise cotton under the present system. Enclosed find sample of fibre. J. O. HARRIS, M. D.

Miami, Fla.

Gleanings from Many Fields.

Importance of the Jute Crop.—The increase in the demand for jute both in its raw and in its manufactured state in this country and in England has been wonderful. In 1862 we imported jute to the value of about $120,000. In 1871, "the whole value of jute, both raw and manufactured, imported from India into the United States was $5,362,988." In 1870 it had been $3,155,271. The increase is thus seen to be 70 per cent. in a single year. The exports from India of jute, raw and manufactured, may be now valued at about $25,000,000 per annum. The New York *World* says:

Much of the land on which cotton grows is suitable for the cultivation of jute. It is raised for about one-eighth of the cost of cotton, and in the present state of the market sells for one-quarter of its price—a clear profit of 100 per cent. It yields much more largely than cotton. In India, as we see, jute is fast driving out cotton and becoming a first-class industry. There is no possibility of its doing so in the South, but there are many reasons why it should be cultivated in connection with it. A writer in the "Agricultural Report" for 1871 very truly says that if the planters of the cotton States divert "from the cultivation of cotton a force sufficient to produce half a million of bales of jute that crop will be nearly a clear acquisition, and will save a large outlay for freight, bale-cloth, and compression of cotton." He further adds that its cultivation "will save several millions (of dollars) sent out of the cotton States every year to purchase gunny cloth." There is no need of its leaving the South except as a manufactured article. The writer from whom we have before quoted says that "the simple machinery used in Kentucky for spinning and weaving hemp might be applied to the jute." The planters should develop this industry at an early day, as in it they will doubtless find a strong ally of king cotton, and an ally supplying in some respects what it lacks as a great industry.

A Steam Motor for the Farm.—Hon. M. Dunlap, in an article on Steam Ploughing in the *Chicago Tribune*, gives his ideas as to what is required to make steam practically available on the farm, and expresses the opinion that Parvin's Machine will meet the requirements of the case. He says:

We must have a farm engine for farm work that can grind and steam food for our animals, that can do our threshing, the pumping of water for stock, the making of cider and of wine, the sawing of wood, the pressing and baling of hay, the cutting of forage for winter feed, the making of drains, the grading of highways, and, lastly, for cultivating the soil and the preparing of hemp, flax and cotton for market. All these things the coming motor must do, and do them well and cheaply—more cheaply than the same work can be done by the use of horses, mules or oxen. Nothing short of this will satisfy the American farmer, or induce him to invest in that poetic steed.

Tall Meadow Oat Grass.—This is the grass about which much has been said in the Rural Carolinian, by North Carolina and Virginia correspondents, under the name of Evergreen Grass. C. W. Howard, in the *Plantation*, thus speaks of it:

It should be said that meadow oat grass will not flourish on ground that is all wet. Good upland, heavily manured, is the soil suitable for it. Horses are exceedingly fond of the hay. It will yield a heavy crop in the spring, and if it be not pastured, will bear grazing from December until wild grass springs. Two bushels of the meadow oat seed to the acre is not more than enough. The best time to sow is during the latter part of August or early in September.

Horticulture and Rural Adornment.

Horticultural Hints for December.

This is a frosty month, even in our most favored region, and the good gardener will give due attention to the protection of such plants as require it. Some hints on the means of doing this, we give elsewhere. Hot-beds are exceedingly convenient in all cases where sufficient attention can be given to them to keep them in an effective condition, but without constant watchfulness and care, the objects of the structure are frustrated and the plants destroyed instead of being forwarded. A cold frame answers to some extent, in our climate, the same purposes as a hot bed, and requires comparatively little attention. No garden should be without one of such size as may be required. It is essentially a mere wooden frame or bottomless box, with a sloping top, like that used for a hot-bed, to be provided with sash or covered with boards and matting, whenever the frosty weather may be indicated. The bottom of the frame should be pressed an inch or two into the soil. For larger and more substantial structures the following plan, described in the *New York Tribune*, is a good one:

Cold frames are usually made of common hemlock boards, nailed to posts driven into the ground, 18 inches to 2 feet deep. These posts are driven so that there will be one in the middle and on either end of the boards when placed in position. These boards are run in parallel lines just 6 feet between from the front to rear, and the lower edge of both boards pressed about one inch below the surface. When the boards are nailed fast to the posts, then cross-ties, three inches wide and three quarters thick, should be mortised in, from front to rear, every three feet, and when finished the top of the cross pieces should be on a level with the top of the frame.

The cold frame should be built in a spot sheltered from the north winds, as on the south side of a fence or hedge. The soil within them should be made rich with well rotted stable manure. Cabbage, cauliflower, lettuce, radish and other plants will thrive wonderfully in such a frame. The sashes should be raised, drawn back, or entirely removed during the day except in our coldest weather, or when heavy driving storms are prevailing. Keeping the plants continually under glass renders them tender, so that any accidental exposure will be sure to kill them.

———It is not too early to make out a list of seed to be procured for spring planting. They should be ordered during the present month, from some trustworthy seedsman, as much depends upon getting good seeds. If you can get them at home—the kinds you want—with any assurance that they are true to name and *fresh*, do so, by all means; but our experience is in favor of ordering directly from well known large dealers at the North. If our readers have followed our advice, they will have on hand seeds of many of our most important garden vegetables of their own saving; but some kinds are better procured at the North.

We cannot make a selection that will suit all persons and places, but, we gave in our last volume (December number) a full list of such varieties as we have tried and found suited to our own purposes, and to that we refer such readers as may need a guide in making their own selection.

——— In this latitude and southward peas may be planted from the middle to the last of the month. To secure a succession, plant several varieties of different habits of growth, for instance: McLean's Little Gem for the earliest; Extra Early, or Dan O'Rourk, and Bishop's Dwarf Long Pod next; and for later supplies, Eugenie, Brown's Marrowfat, Champion of England, and Large White Marrow; or we may depend for a continued supply upon successive plantings of any favorite variety—Eugenie, for instance, which we prefer to all others.

——— Cabbage plants from September and October sowings, where one is fortunate enough to have obtained good ones, may now be put out. If necessary give them protection by throwing your ground into ridges, running north and south, and planting them on the west side of each ridge. You can cover them slightly with straw in severe weather. They should produce fine heads in April. Cabbage seed, if heretofore neglected, may still be sown in a cold frame. Try Early Ulm Savoy, Little Pixie and Early Dwarf Flat Dutch.

——— English or Broad Beans, Onions, Spinach, Radishes, Lettuce may be planted this month, but the last two are liable to be killed by hard freezes, unless protected, even in this coast region. Some plant Irish potatoes about Christmas, but we prefer to delay till the middle of January or the first of February, as those planted earlier are often cut down by frost and greatly injured.

———The transplanting of fruit trees and grape vines may be continued through the winter, but we consider the season less favorable than the last month for that purpose, especially if the weather be severe. Root grafting and planting the seeds of fruit and forest trees may now be done with advantage, as well as pruning and manuring. Get trees from known and trustworthy nursery-men, and avoid all tree peddlars.

———If more roses are wanted, they may now be planted, preparing the ground thoroughly by manuring and deep digging. Tastes differ in regard to the best roses. Fifteen rose-growers in England were separately asked to name the best twelve roses. Only three were found on all the lists alike, as worthy to be named among the best: 1. Marechal Neil; 2. Baroness Rothschild; 3. Marie Baumann.

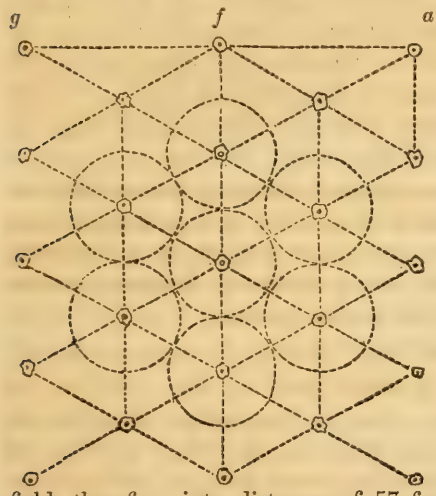
———Circular, oval and cresent-shaped flower beds are much more beautiful than rectangular ones. In making new beds *dig the ground very deeply*, and manure with fine, well-digested compost, made up largely of leaf-mould or other decayed vegetable matter. Such a bed will withstand drought wonderfully. Avoid situations where the roots of trees are likely to penetrate. Where they are present nothing else can thrive.

———Rose bushes of the spring or summer blooming class—roses which bloom but once a year—may now be closely pruned, unless they were trimmed, as is perhaps better, just as the full growth begun. The true perpetuals—Tea, Bourbon and Noisette roses—should be pruned but little at any time.

———In the other departments of flower garden work, little can be done except to make good, so far as possible, any neglect of previous months in the way of manuring, digging, transplanting shrubs and vines and planting bulbs.

Hexagonal Planting for Orchards.

The hexagonal or modern quincunx form of arranging trees in an orchard has two advantages over the square arrangement. First, it gives the plantation a more picturesque appearance, and, second, it economizes space, the trees being more evenly distributed over the ground. One reason why this mode is so little followed, is the supposed difficulty of laying off the ground; but that is very simple as thus shown in the "Annual Register of Rural Affairs:"



To lay off a piece of ground for this purpose, measure off one side of the field at equal distances, as at *a*, *b*, *c*, *d*, *e*. The distances must be the distance apart at which the trees are to stand, because they form the sides of the equilateral triangles into which the whole ground becomes divided. The next thing is to find the distances, *a*, *f*, *g*, for the line of trees at right angels to the first mentioned row. An arithmetician will easily determine this, for the triangle *b a f*, being a *right* one, the square of *b a* (which is 33 feet,) subtracted from the square of *b f* (which is 66 feet,) will leave the square of *a f*, the root of which extracted will give the distances of *f f g*, &c., which is 57 feet and a half an inch. Divide this and the opposite side of the field, therefore, into distances of 57 feet and half an inch, and the side opposite the first, at 33 feet distances, and proceed to stake off all intermediate intersections. If the distances are less than 33 feet, as they would be for any other kind of fruit trees, a corresponding proportion is of course to be taken, which is easily determined as above.

The Saunders Raspberry.

This is another of Mr. Herstine's new raspberries, named for Mr. William Saunders, Superintendent of the Experimental Gardens of the Department of Agriculture. It is, like the Herstine, a cross between the Philadelphia and the Allen, and is described as a thrifty grower and a prolific bearer. Fruit, very large, round; color, crimson; grains, large; flavor, delicious. It has not yet been tested by us but we believe it to be worthy of a trial in this climate. Our Frontispiece fairly represents its appearance.

Grape Crop of Greece.—The vintage is finished all over Greece, the total quantity of grapes gathered in being nearly 250,000,000 of pounds, of which 10,000,000 have already been exported. The prices fetched have been from 20 to 42 thalers, according to district and quality.

Seasonable Orchard and Garden Notes.

How to Plant a Grape Vine.

The first thing to do is to prepare the ground thoroughly by ploughing and subsoiling, if you are planting a vineyard, or by deep digging if for a few vines in the garden. Garden soil is generally quite rich enough for the grape, without further manuring at the time of planting, though a small quantity of bone dust and wood ashes will generally promote a healthy growth, without undue stimulation. The ground being ready, mark it off with a line and put down a stick or small stake where each plant is to stand. For Delaware, Catawba and other moderate growing varieties, six feet apart each way is about the right distance in vineyard culture. In the garden, they may be given more room. Hartford Prolific, Clinton, Concord, Herbemont, Walter and other strong growers should have at least ten feet for each vine, in the row, the rows being six feet apart, as before. Dig the holes about ten inches deep, with one side sloping to the stick with which the place of the vine is marked; replace the stick or peg with a good stake, five or six feet long, firmly set in the ground; raise a slight mound in the bottom of the hole on which rest the lower end of your plant and spread the roots (somewhat shortened, if very long) evenly over it, the vine pruned to two buds, resting against the sloping side of the hole near the stake; fill in the earth and press it about the plant, leaving it a little higher than the surrounding surface, to allow for settling.

The best Peaches for Family Use.

Tastes differ and so do soils and climate, and any list we may give of any species of fruit must be considered as subject to amendment, to adapt it to the notions of persons and the conditions of places. For a dozen varieties we would choose as follows: Hale's Early, Early Tillotson, Early York, Early Crawford, Amelia, Columbia, Grosse Mignonne, Chinese Cling, Indian Blood, Stump the World, Late Admirable, Austin's Late.

A Beautiful Early Summer Flowering Plant.

The Gloxinia, with its large bell-shaped flowers, of the most delicate and brilliant colors, is one of the most beautiful of our green-house and conservatory plants. There are two varieties, one with erect or upright flowers, and the other with drooping or pendulous ones. The tubers should be planted in February or March, in a rich, light soil, and kept in a warm, moist atmosphere.

Mr. Dreer gives the following list of desirable varieties. Those marked with a * have erect flowers:

Apollo, beautiful violet; Baron de Vriere, pale blue; Bergeronette, white and rose; Candida, pure white; Cardon Lavende, white and lavender; *Carl Enke, white and lavender;

*Flammea, scarlet and rose; *Lady C. Villars, white and pink; *Leon de Frammenville, violet and purple; Mina, white, crimson throat; *Marquis de St. Innocent, white and violet; Purpurea, dark purple; Rubra, crimson; Marie Van Houtt, white, carmine margin; *Rose Castileone, dark rose; *Victor Lemoine, rosy violet; Vlaanderen, large violet purple.

Winter Protection for Garden Plants.

There are many plants, which, after they are well established and have grown a few inches in height, are perfectly hardy in our climate, but which, when young and tender, and especially when sudden cold follows a term of unseasonably warm weather, are liable to be killed by frost. Beets, carrots, radishes, lettuce, cabbages, and turnips are of this character. All these plants should be sown in the fall for spring crops, and by taking a little trouble they can generally be carried through the winter in safety, at least in the latitude of Charleston and southward. In the first place, it is well to plant, when practicable, on the west side of a tight fence, where the morning sun cannot strike the plants. This precaution alone will, in a majority of cases, save a crop which in an exposed situation would certainly perish. They may be severely frozen, but if they thaw *in the shade*, they will seldom be injured. Throwing the ground into ridges and planting on the west side of them will often serve the same purpose, and when neither of these modes of protection are practicable, a light covering of straw, dried grass or leaves, to be removed when the danger is over, will, in nine cases out of ten, save a crop of young turnips, beets, or cabbages; and they are well worth the trouble. Every garden should also have a large cold frame, (elsewhere described) in which a few plants, of various kinds, can be made entirely safe in the coldest weather.

The Cyclamens and How to Cultivate Them.

There are few more showy plants than the Cyclamens, and few more easily grown, either in the sitting room window, or a cool greenhouse. Their flowers are the personification of chasteness, beauty and grace. Their culture is very simple. A mixture of turfy loam, leaf-mould and sandy peat, is a compost they delight in. Use five or six inch pots, according to the size of the bulbs; and when newly potted, water moderately until the leaves are well developed and the flowers begin to appear. When in full growth, they should be watered freely. *Taking care at all times, that the drainage is in good order, as these plants are impatient of moisture at the roots.* See Dreer's catalogue for the finest varieties.

Triomph de Gand Against Wilson's Albany.

A Mr. Pillow, who cultivates strawberries, on a heavy loam, near Rochester, N. Y., has nearly equal acres of Wilson and Triomph de Gand. He raises the fruit for market, and the results are reported in the *American Rural Home*, as follows:

He raised on about 300 square rods, 6,288 quarts of Triomph, which he sold for $1,058.78. On about two acres of Wilson, he raised 10,500 quarts, which he sold for $1,039.76, in other words, the Triomph yielded 3,353 quarts to the acre; the receipts were $565.33 per acre; and they averaged sixteen cents eight mills per quart. The Wilson's yielded 5,250 quarts to the acre; and the receipts were $520 per acre, averaging nine cents nine mills per quart. This is favorable to the Triomph for his soil and for his market, but the results might be quite reversed in another locality.

Short Excerpts and Brief Comments.

Strawberries and Raspberries.—Dr. Silas T. Gilbert, of Memphis, Tenn., in the *Gardener's Monthly* for November, expresses the opinion that the strawberry as well as the raspberry, in the South would do much better if partially shaded. I attribute, he says, the late disasters to my crops partly to hill culture. Let others say what they please, he adds, but I am satisfied from careful observation that the alternate row system with hand cleaning amongst the vines, letting the runners root, is by far the best system for the South. It *will not* do to put negroes in a strawberry patch with hoes in their hands, for they *will* cut up one-third of the hills before the season is over, besides the injury done by thrusting the hoe too deeply under and about the plants everywhere, and dragging away the dirt. A neighbor of mine clears his alleys with horse power, and finger picks the plants in the matted rows; I shall hereafter certainly follow suit.

Though these views are at variance with those we have heretofore entertained and expressed, we had, before seeing Dr. Gilbert's remarks, determined to try the "matted rows" on one of our beds, by way of experiment.

Domesticating Wild Plants.—In Europe, the *Gardener's Monthly* says, many of the most popular hardy plants are from American woods and prairies, and as we must of necessity, it seems, copy after Europeans in what they first see fit to do, it will be quite in the fashion to go out into our fields and fence rows and collect the beautiful things we find growing there. Another matter of interest in regard to collecting hardy herbaceous plants is, that there are a large number of rare native plants not yet in cultivation, which many an owner of a first class collection would give a good deal to possess. A collection from one's own neighborhood would therefore often be really one of the most valuable one could possess, and be the foundation of a series of exchanges with others, which would soon swell a little collection to one of the best.

A Curious Statement.—The expedition to the Rocky Mountains found on the borders of the Arkansas and near the eastern side of the Great Desert, hundreds of acres of the same kind of vine (*vitis vinefera*) which produces the wines of Europe. These vines were growing in a wild state and were surrounded with hillocks of sand, rising to within from twelve to eighteen inches of the ends of the branches. They were loaded with the most delicious grapes, and the clusters were so closely arranged as to conceal every part of the stem. These hillocks of sand are produced by the agency of the vines, arresting the sand, as it is borne along by the wind.

We find this singular statement in the *Horticultural Register* for August, 1836. Does any one know of any confirmation or explanation of these alleged facts by later explorers?

A New Steam and Hydraulic Cotton Press.

We are glad to note the entire success of the new patent cotton press, the invention of our fellow-townsman Mr. John F. Taylor, senior member of the enterprising firm of J. F. Taylor & Co., of the Phœnix Iron Works. It seems to throw into the shade all previous inventions in the same line. Mr. Wm. H. Walker, Superintendent of the Charleston Hydraulic Cotton Press Company—excellent authority—gives it as his opinion that "it is *the most perfect machine for compressing cotton in the United States.*" He adds:

The experience of more than twenty-five years in the cotton press business, justifies me in asserting that this press surpasses the Tyler, or any other press of which I have any knowledge, *very much in power*, and fully equals any in speed; it is of immense strength, beautifully proportioned, very compact, entirely of iron, and capable of exerting a compressing power of fully *one thousand tons* pressure. In testing the capacity of the press, with only sixty pounds of steam on the boiler, one hundred bales of cotton were compressed in one hour, the press moving as fast as a full gang of hands could handle the cotton, pressing the bales to a density unequalled by any press of which I have any knowledge. It is now in successful operation, acknowledged by all who have seen it moving, to be unequalled in power in this country or elsewhere.

We congratulate Mr. Taylor on his grand achievement, and trust he will be fully repaid for the labor and thought it must have cost him to bring it to such perfection—not in reputation alone, but in the more solid rewards of pecuniary profit.

Applied Chemistry and Mineralogy.

All communications and notes of inquiry intended for this Department, as well as specimens of soils, fertilizers and minerals for analysis or description, should be addressed to Charles U. Shepard, Jr., M. D., No. 20 Broad street, Charleston, S. C.

Soils.—III.

In the preceding number of the Rural Carolinian, the writer has called attention to the forces which enable the plant to abstract the soil-food, and it is with a view of presenting the manner of their action in a more intelligible form, that he has prepared and offers the following table:

The first column contains those basic ingredients of soil-food which are absolutely necessary for the healthy growth of the important crops. The indispensable acids are given below. Other elements are often met with in the analysis of the ashes of plants; but even if one or more of them are constantly present in certain plants, still they hardly gain thereby the character of being indispensable, at least, for those crops referred to above. The second and third columns represent the combinations in which these indispensable ingredients occur in the soil. The fourth column shows the effect which is produced by the action of water containing carbonic acid gas in solution, whether atmospheric in origin, (rain water,) or due to

the decomposition of organic matter in the soil. The fifth column gives the action of the different alkaline and earthy salts which occur in rain and soil water.

TABLE.

Indispensable ingredients of plant-food derived from the soil.	Chief mineral combinations in which these ingredients occur.		Action of water containing carbonic acid, *i. e.* either rain or soil-water.	Action of alkaline and earthy salts upon the mineral comp'ds.
	United with	*In*		
Potash.	Silicic Acid.	Feldspar,	dissolved partly and decomposed easily.	These silicates are readily decomposed by the carbonate, sulphate, and nitrate of ammonia, chloride of sodium and other salts.
		Leucite,		
		Mica,		
Magnesia.	Silicic Acid.	Talc,	little action.	
		Biotite,		
		Amphibole,	decomposed more readily.	
		Phlogopite,		
		Serpentine,	decomposed less readily.	
		Chrysolite,		
	Carbonic Acid.	Magnesite,	easily soluble.	
		Dolomite,	less soluble.	Nitrate of ammonia hastens the solution of these carbonates.
Lime.		Calcite,	easily soluble.	
		Arragonite,		
	Silicic Acid.	Zeolites,	dissolved and decomposed.	decomposition and solution effected.
		Pyroxine,		
	Sulphuric Acid.	Gypsum,	readily dissolved.	
	Phosphoric Acid.	Apatite,	dissolved slowly and decomposed.	solution much more rapid.
		Phosphorite,		
Iron.	Sulphur.	Pyrites,	readily decomposed and dissolved.	decomposition hastened.
	Oxygen.	Oxide,	dissolved.	
The above bases.	Nitric Acid.	Decomposed organic matter,	readily dissolved, occasionally with decomposition.	same as with carbonic acid water.

The remaining indispensable ingredients are phosphoric, sulphuric, and carbonic acids, (which occur in the soil in the combinations given in the table;) as also nitric acid, which is present in the soil combined with a base; or in its stead, the material from which it is formed. The action of carbonic acid water and aqueous solutions of salts, representing more or less the composition of soil-water, upon these combina-

tions, has been described above. The forms in which these ingredients of soil-food are abstracted by the plant, may be considered as follows:

Nitrate, carbonate and phosphate of potash.

Nitrate, bicarbonate, sulphate and phosphate of magnesia.

Nitrate, bicarbonate, sulphate and phosphate of lime.

Nitrate, phosphate and bicarbonate of iron.

The division of the agents, which, in the soil, decompose and dissolve the mineral compounds containing the plant-food, into rain-water, carbonic acid and alkaline salts, rather than into pure water, carbonic acid, &c., seems desirable for several reasons. In the natural operations of the soil and crop, pure water is unknown. The soil-water has been shown to contain a considerable quantity of dissolved saline matter; and rain-water is known to hold, in solution, solid matter to the extent of 5-100,000 of its weight, consisting of carbonic and nitric acids, ammonia, &c. These dissolved substances give to rain-water and soil-water a much greater force for decomposing and dissolving mineral matter in the earth than is possessed by pure water. The water of the soil contains a comparatively large amount of carbonic acid, and, hence, is able to exert much greater power than rain-water.

As was previously mentioned, this carbonic acid is due chiefly to the oxidation of organic matter. In the table no reference has been made to the part which organic acids—more especially the humic acids—play in the decomposition and assimilation of the plant-food derived from the soil. This omission is in consequence of the writer's intention to present, at another opportunity, a brief consideration of the origin and function of the organic matter of the soil; which, if introduced at this point, would too greatly extend the present article. Finally, the reader's attention is again called to the fact that there are forces constantly at work in every soil which not only produce an increase in the soluble plant-food, but also thereby augment the available nutrition, (since it has been shown that plant-food can be absorbed by the rootlets from insoluble compounds,) inasmuch as mineral and coarse masses of matter are disintegrated and decomposed by them.

The amount of plant-food in a soil is variable; depending on the character of the rocks which produced it, as also on the degree of its exhaustion by vegetation. The amount of *available* plant-food is, in addition to the above conditions, dependent on the exertion of the forces previously considered. An ultimate chemical analysis, *i. e.*, a determination of the amount of its indispensable and dispensable ingredients, affords a knowledge of the present and (indefinitely) future fertility of the soil, and can only be obtained by the complete analysis of all the components.

A practical analysis is, strictly speaking, impossible with the knowledge and means of investigation at present at the disposal of the chemist; and for the following reasons: The chemist is unable to exactly imitate the processes of nature in the abstraction of soil-food. His laboratory experiments can only approximate to them. The practical analysis is not only the determination of the plant-food available at the time of the investigation, but that which will continue to be furnished during, say, the cultivation of one crop. One difficulty lies in the choice of a solvent. This re-agent must be one which shall extract the available plant-food, and leave behind all that which is so securely locked up as to be incapable of assimilation by the plant.

Additional embarrassment is created by the great dissimilarity in point of duration between the operations of the natural and the artificial laboratories. Natural

processes, without exception, never arrive at a termination, nor are they ever at a stand-still. In comparison to the processes of the chemist they may appear weak, whereas their action being inexhaustible and constant, becomes irresistible. The extraction of a soil by artificial means, in the hands of a chemist, is rapid, and, so far as he can judge approaches completion. Under natural forces the same process is infinitely gradual, but ever tending to the same result.

Hence it is, perhaps, permissible for the chemist to compare the results of his powerfully and rapidly acting processes with those of nature, which though gradual and obscure, are, in effect, very similar.

It is in view of this difficulty that agricultural chemists have acquiesced in the necessity of following uniform methods of analysis, that they may be able to compare their results, and hence to pass judgment on the comparative fertility of soils under investigation. Since fertility and sterility are, in general, merely terms of degree, this course does not appear inappropriate. By subjecting all soils to the same method of investigation, it is possible to obtain a clear idea of their capability to support and nourish crops. The solvents ordinarily employed in the examination of soils may be divided in two classes, not only as to strength, but also in their similarity to natural processes.

1. *Strong and artificial solvents.*—To this class belong the mineral acids, which when used in concentrated form and aided by heat, almost entirely decompose and dissolve the mineral and other matter of soils. It has been found expedient to make use of cold muriatic acid as a solvent, and most analyses are now conducted by this process. The results are intermediate between the ultimate and the practical, since it is generally inferred that this re-agent exerts far greater power than those natural processes previously treated of. Although, under high culture, it is possible that the crop can gradually abstract from the soil as much as is thus artificially obtained.

2. *Weaker and more natural solvents.*—To this class belong water charged with carbonic acid, and solutions of alkaline salts, including caustic ammonia. These solvents exert comparatively feeble force in extracting plant-food from soils, and are, hence, to be used in large quantity. Their value consists, principally, in furnishing data for the comparison of different soils, as also for the comparison of the successive extracts. Thus it is possible not only to compare different soils, with regard to their fertility, *i. e.* the amount of plant-food which they yield to solvents of a strength approaching those of nature; but by the comparison of successive extracts, it is possible to judge of the capability of restoration which is inherent in the soil.

Having thus endeavored to show the relation which exists between the actual and the total fertility of soils, and the means by which the latter is converted into the former, as also the methods employed by the chemist for an estimation of each, the writer will present a few analyses of soils, executed in his Laboratory by himself and his fellow-workers in chemistry. These almost belong to the class of ultimate analyses, but at another opportunity he hopes to offer several, so-called, practical analyses, *i. e.* those which shall represent the actual fertility of the soil.

Answers to Chemical Inquiries.

E. B. S. The following analyses, executed by Dr. W. D. Wamer, in this laboratory, give the amount of ammonia yielded by cotton seed:

	per cent.
Ammonia yielded by a sample of sea island cotton seed	3.65
Ammonia yielded by a sample of fresh upland cotton seed	3.67

According to the above per centage of ammonia produced by cotton seed, it would require 8,197 pounds of that article to afford as much ammonia as is yielded by 2,000 pounds of a guano containing 15 per cent. There are two ways to best utilize cotton seed, and the choice between them must depend on circumstances; such as distance from mill, price of oil, difficulty of keeping stock, &c. The one is to compost the cotton seed with an acid phosphate, whereby the seed becomes thoroughly decomposed, and the result is a good nitrogenous fertilizer, whose phosphate is readily available for the plant. The other is to express the oil, and to use the seed cake as feed for stock, whereby a valuable stable manure may be obtained at the same time that the stock is well fed. If each community of cotton planters could erect and support one such press it might be the means of saving, or, at least, best utilizing one of the chief products of the land. The two first of the following analyses of cotton seed cake were executed in this laboratory by Mr. D. C. Anderson; they may prove interesting to the readers of the RURAL CAROLINIAN:

I. Is a sample of very dry cake, at least two years old.

II. Is a sample of freshly prepared cake; as it came from the press, where it does not appear to have been subjected to any great pressure.

III. Is a sample of fresh, but more thoroughly pressed cake.

ANALYSES OF COTTON SEED CAKE.

Ingredients:	I.		II.		III.	
		p. c.		*p. c.*		*p. c.*
Moisture, expelled at 212° fahrenheit		7.80		8.26		9.50
Oil		11.60		25.99		11.68
Other Organic Matter		72.82		58.73		69.92
	p. c.		*p. c.*		*p. c.*	
Phosphoric Acid	2.80		2.56		3.59	
Sulphuric Acid	0.40		0.32			
Potash	1.05		0.95		1.13	
Lime	1.25		0.96			
Soluble Silica and Sand	1.03		0.80			
Fixed Ingredients, determined		6.58		5.59		4.72
Fixed Ingredients, not determined, largely Magnesia.		1.25		1.43		5.18
Total		100.00		100.00		100.00
Ammonia, yielded by the Organic Matter		3.92		6.63		6.70

Two thousand pounds of fresh cotton seed cake yield at 6.665 per cent. (average of two analyses) 133.3 pounds of ammonia. Two thousand pounds of a guano yielding 15 per cent. ammonia, would be equivalent to 4,500 pounds of cotton seed cake.

The following determination of the valuable ingredients in *cotton seed hulls* was made in this laboratory:

	p. c.
Ammonia, yielded by decomposition of organic matter	0.65
Phosphoric Acid	1.95
Potash	0.925

The following is the analysis of *fresh farm yard manure* as given by Alfred Sibson in his work on Agricultural Chemistry:

	p. c.
Water	66.17
Soluble organic matter	2.48
Soluble inorganic matter	1.54
Insoluble organic matter	25.76
Insoluble inorganic matter	4.05
	100.00

Whole organic matter yields on decomposition 0.780 p. c. of ammonia. The above analysis represents the composition of fresh farm yard manure (composed of horse, pig and cow dung, about fourteen days old.) Inasmuch as the composition of stable and other manure will vary so much according to the quantity and quality of the food and the straw, it seems impossible to give any general statement as to its exact chemical composition.

——— R. C. The addition of hydrochloric (*muriatic*) acid to urine, as recommended by the Mass. *Ploughman*, is designed to decompose the urate of soda; thus, gradually, setting the uric acid free. Dilute sulphuric acid accomplishes the same effect. The presence of the free muriatic acid prevents the alkaline decomposition of urine, and, consequently, any loss in its nitrogenous ingredients. Muriatic acid answers the requirements best, but either sulphuric acid or copperas (the sulphate of the protoxide of iron) would likewise prevent the alkaline decomposition of the urine. The subsequent neutralization with carbonate of lime would ultimately convert the protoxide of iron into the sequioxide; a matter of some importance, since we know that the protoxide salts of iron exert a prejudicial influence upon young vegetation. Nearly all land contains sufficient iron for the wants of the plant, so that an addition is unnecessary. There are certain sour lands which might bear with advantage the application of copperas, as this treatment would hasten the decomposition of the organic matter.

Muriatic acid costs in New York or Philadelphia by the carboy, 3½ cents per pound; sulphuric acid, 2½ cents per pound, and copperas 1¾ cents per pound.

Laboratory for Analytical Chemistry, 20 Broad street, Charleston, S. C. S.

Natural History Applied to Agriculture.

Specimens of insects, securely packed, (according to instructions given in The Rural Carolinian, for April, 1872,) with letters of inquiry, entomological notes, etc., should be addressed, (post paid,) to Mr. Charles R. Dodge, Washington, D. C.

Insects as Food.

In our previous talks about insects we have only considered them as devourers of our personal property, or as devouring each other, but if their insatiable jaws have brought them into discredit, they have compensated for the wrong in a slight degree by offering up as a sacrifice, certain of their own species as food for man.

We are told that the large, fat, fleshy grub of the palm-weevil (*Corydalia palmarum*) or, as it is called in the West Indies, the *Grugru*, is esteemed highly as an article of food in both the Indies. We have also read of an Indian king who for dessert instead of fruits set before his Grecian guests a roasted worm taken from a plant, which was probably the larva of this insect.

In some parts of the world the grubs of some of the larger species of beetles are eaten, and considered great delicacies. Pliny, in speaking of the diseases of trees, tells us of a large grub which is taken from the oak, which the Roman epicures even fed with meal in order to fatten them.

Locusts were used as food, as far back as Bible times, if we are to believe Holy Writ, for among the "clean" animals that might be eaten by the Jews (Lev. 11-22,) are mentioned, "the locust, the bald-locust, the beetle and the grasshopper." We are also told of John the Baptist that "his meat was locusts and wild honey," and at this late day when locusts are used so largely as food, in so many different countries, there is no disputing that a kind of grasshopper was meant. In the cities of Arabia locusts are brought to market on strings, and are prepared for eating in different ways. An Arab will place a handful of them on the glowing coals until roasted, and then take them, one by one, by the legs and head and devour the remainder. They are also roasted in ovens and eaten with salt. The Arabs, of Morocco, boil them and then dry them on the roofs of their houses. We are told by Kirby and Spence that the Arabs at Mecca, when there was a scarcity of corn, would grind them into flour in their hand mills, and then make them into cakes with a little water, and bake them in the usual manner. They are also eaten by the natives of various parts of Africa, by whom they are sometimes cured or prepared by smoking. The same authority states that they are preferred by the Moors to pigeons, and a plateful of two or three hundred may be eaten without any ill effects. In our own country, they are eaten by various tribes of Indians and in some cases we are able to trace the species. The Snake Indians, of Oregon, as well as the Utes, and perhaps other tribes, collect large numbers of the *anabrus simplex*, or devastating locust or "cricket" of Utah, and grind them into a coarse meal, in which heads and legs are frequently seen almost entire. This is mixed with the seeds of a kind of grass, or weed which

grows abundantly in the vicinity, and then made into bread. The Digger Indians eat their locusts and grasshoppers too, much in the same manner as the Arab mentioned above, roasting them to burn off the spines, which they claim would otherwise scratch their throats, after which they bolt them whole. They sometimes eat them with pounded acorns, hawthorn and other berries. They are often gathered in sacks, saturated with salt, and placed for a short time in trenches heated with hot stones, and eaten whole, or are ground and put into mush or soup. Their manner of catching the insects, as related by Dr. Palmer, a personal friend, who has spent much time in the Indian country, is as follows: When the insect attains its best condition, the Indians select some favorable locality and dig several little pits, somewhat like inverted funnels in shape, in order that any insects that get in may be prevented from easily flying or hopping out. When the pits are ready an immense circle is formed, the surrounding grass is set on fire, and men, women and children station themselves around the fiery belt, keeping up a ring of flame until the insects are either captured in the pits or roasted by the fire.

The Cicadas, or, as they are commonly known, "harvest flies," (also called locust) according to Aristotle, were eaten by the Greeks, and were esteemed most delicious just before the pupa bursts its shelly covering to become a perfect insect. We have also read that the seventeen year locust was eaten by some of the North American Indians, who remove the wings and then boil them.

In Mexico, the eggs of the *Corixa fœnorata*, a water insect, belonging to the *hemiptera*, are eaten largely by the natives. The insects deposit large numbers of their eggs in the water, at the edges of lakes or similar bodies of water, and these are fished out, dried, and sold in the markets, "pounded and cooked, and in lumps forming a substance like the roe of fish." The eggs are about the size of a pinhead, and are whitish and round. The natives in the vicinity of Lake Pexcuco, cultivate a sort of carex on which the insect deposits its eggs very freely. The carex is then made into bundles and floated in the water until covered with eggs, when they are taken out, dried, and beaten over a large cloth.

The Chinese are said to use the chrysalis of the silkworm as an article of food after the silk is wound from the cocoon. They also eat a large caterpillar belonging to the same genus with the tobacco worm, and even tobacco worms themselves are eaten by the Pimos Indians, made into soup, or fried until crisp and brown. These insects are gathered by bushels. Some African tribes are said to have the same disgusting habit.

Ants are used as food in various parts of the world, and particularly in Africa. White ants are eaten by the Hottentots, who get fat on them; they are parched in iron pots over a gentle fire in the manner of roasting coffee, and in that state are eaten greedily, resembling in taste sugared cream. A species of yellow ant is sometimes used as food in Brazil, and ants are even eaten in our own country by the Indians. They are caught by spreading a dampened skin, or fresh peeled bark over their hills, (which are sometimes quite large) and as soon as covered with the insects, it is removed and shaken, and the ants placed in tight sacks, where they are confined till dead, when they are carefully dried in the sun and packed away; they are gathered in this way by the bushel. It has been stated that to give flavor

to inferior brandy in some parts of Sweeden, ants are distilled along with the rye. Bees are eaten in Ceylon, the natives not being content with their honey.

The larvæ and pupæ of a dipterous insect called *ke-chah-vie* (veritable maggots,) are gathered in large numbers on the shores of Lake Mono, in California. When dried and pulverized, and mixed with acorn meal, they are either baked as bread, or boiled in water heated by hot stones, and made into soup. We have ourselves tasted some of the dried larvæ and found them not quite so bad as might be imagined, reminding one of very rancid butter; however, they might have spoiled on their long journey.

Spence tells us that lice "are eaten by the Hottentots, and natives of the West Coast of Africa, who, from their love of this game, which they not only collect themselves from their well stored *capital* pasture, but employ their wives in the chase, have been sometimes called *Phthirophagi.*" Spiders even are eaten in some localities; but why swell the list any larger? Enough has already been said to show that insects furnish no inconsiderable amount of food for many different nations, and people.

Reader, have you ever eaten insects? Undoubtedly! To put the question in a plainer form, have you ever eaten green peas? There! now, I do not intend to spoil your appetite for that most delicious of early vegetables, but there is no denying the fact that the eggs of *Bruchus pisi*, are deposited on the outside of the tiny peas when the pod is first formed, and it is as certain that little brownish beetles do dig their way out of the mature peas early in spring. Young man, before you suck your julep, examine the leaves of mint, if they have not been previously examined, and see whether or no, any of those almost microscopic plant lice have colonized upon them, for such things do happen, but after all would you know it if your eyes didn't tell you of it?

Perhaps we are all, more or less, insect eaters, for insects abound in nearly everything; and eating nearly everything, as we do, it is not at all unlikely that a stray chestnut or apple worm, cheese-mite, or other-such insect should be made food with the rest. Truly,

"Where ignorance is bliss 'tis folly to be wise."

Answers to Correspondents.

———R. T. L., Charleston. Your box was received through the postoffice, the several pieces of pasteboard composing it hanging together, and that was all. We suppose it might have been started with insects, but it is to be presumed that they were "spilt out" long before reaching their destination. Pasteboard boxes make poor transportation cases, and, if used at all, should be firmly done up in strong paper, gummed and tied, then if smashed by the postman, we at least can comfort ourselves with the poor remains.

———Oleander Insects. "Lady Reader." The insects clustered on the leaf of Oleander, sent by you, are known as scale insects (a species of coccus,) and destroy the life of your plant by sucking out its juices. If you will examine your

insects closely with a magnifying glass, you will find numbers of little eggs just beneath the edge of the scale-like covering; when these hatch, the young crawl around over the plant and finally fix themselves, insert their probosces and go to work. A hard waxy secretion soon forms over them, and they are then fixed for life. The males are very minute, winged flies, which, in the first stage live in the same manner as the females.

One remedy is to wash the leaves in kerosene and water, one part of each; though a better remedy, and one which is used in the green-houses of the Department of Agriculture, is to mix carbolic acid and water, in the proportion of one and a half to two drachms of the former to a gallon of the latter. Where a plant is *very* badly affected we should recommend burning it.

The Harlequin Cabbage Bug.

I have just read the article in the last number of the RURAL CAROLINIAN concerning the "Harlequin Cabbage Bug," and for the benefit of my fellow sufferers, I write to inform you that the Entomological Editor is mistaken in saying "the chickens will not eat them." A neighbor saved her garden by confining the chickens in it, while mine was totally destroyed because I kept the chickens out. My chickens have recently found the bugs in existence, and are industriously seeking them every day. I know the bug well, and am confident the one described, and the pest of my garden this summer are the same. I have found them on my grape vines and strawberries. MRS. P. T. HENRY.

Kittrells, Granville Co., N. C.

[We introduce the foregoing into Mr. Dodge's Department without having had an opportunity to consult him on the subject, presuming that he will be glad, in such a case, to find that he was laboring under a mistake, if it shall prove to be one; but persons not learned in "bugology" are very liable to fall into error in regard to the species. We trust, however, that our fair correspondent is right, and the chickens too.—ED.]

THE DAIRY, FARM STOCK AND POULTRY.

The Horse Epidemic and its Cure.

The horse disease (evidently a kind of catarrhal fever) which has spread so rapidly over the country within the past month, is now the all-absorbing topic among the owners and drivers of horses. So far as we have observed it here, it is of a milder type than at the North, and in most cases yields readily to a very simple treatment. In fact, the great danger, we think, lies in overdoing the medication. In the great majority of cases, careful nursing and strict attention to cleanliness, ventilation and disinfection will be all that is required. Use chloride of lime and carbolic disinfectants. Sponge out the nostrils frequently with warm

vinegar and in severe cases steam with vinegar. "This is done by putting a hot brick into a feed bag, fastening it on the horse's head, and then pouring vinegar upon the brick, causing the steam to rise up into the nostrils. This causes sneezing, and rarely fails to give immediate relief." Bran mashes mixed with tepid water are good. The hay and oats should be moistened with tepid water—tar-water if it can be had.

A physician writes to the Buffalo *Courier* that he feeds entirely on bran mash and clean oat or rye straw moistened with brine and gives from six to eight drachms of bromide of potassium, three times a day, dissolved in a bran mash, continued for two or three days, while the inflammation lasts. The following is also recommended on good authority, given as a drench, night and morning, during the first stages of the disease:

Spirits of Nitric Ether	1 ounce.
Laudanum	4 drachms.
Nitrate of Potasa	3 drachms.
Water	1 pint.

Mix.

It is important to withdraw the animal from work, at once, on the appearance of the first symptoms of the disease, which generally are a watery discharge from the nose, hot mouth and cold extremities.

Patrons of Husbandry and Agricultural Societies.

The State Fair and the State Society.

The advantages of a State Fair are many and great, and we are not disposed to permit the fact that our Fairs are not just what they should be, to utterly discourage us in regard to them. We think the true policy is rather to labor for their improvement—to try to purify and elevate them. To that end we shall, from time to time, express our opinions freely in regard to their management, and we invite others to do the same—not captiously, but in the spirit of friendly criticism. The object should be to help, and not to embarrass, those who have, with so much public spirit undertaken the unremunerative and thankless task of managing them.

The late Fair at Columbia, though by no means a failure, was far from being what it should have been as an exposition of the agricultural and mechanical industries of the State. Of cattle, we were glad to note a very creditable show, but in the other sub-divisions of the Stock Department, the exhibition was meagre, as it was in farm produce and manufactures. Do not our people see the advantages to themselves and the State of these annual exhibitions of the products of their industry and skill? or what is the matter? Every facility was offered them by the officers of the Society, who have labored zealously and energetically to ensure success. All praise to those who did their duty and brought their best to show what they had done, and to encourage others to try to do as well or better. They were

in earnest, and they prevented the Fair from being a failure. If some hundreds of others, equally able to swell the list of exhibitors had done as well, we should have had a Fair to be proud of. We hope they have made up their minds to do so next year.

If the exhibitors of fat women, giants and disgusting monstrosities, and the nameless host of gamblers and swindlers, can not be prevented from attending fairs, may they not at least be excluded from the fair grounds, so that the good taste and moral sense of the respectable people, who wish to enjoy the legitimate exhibition, may not be offended by them at every turn? This thing seems to us a growing and a crying evil, and we know, from many remarks we heard to that effect, that we are not alone in holding the opinion that it should be abated, if possible.

It is not our purpose to speak of the exhibition in detail. The list of premiums awarded, together with the proceedings of the Society, will be published, as usual, and distributed throughout the State.

From the eminently judicious and practical suggestions of the worthy retiring President of the Society, Gen. Hagood; the admirable choice made in his successor, T. W. Woodward, Esq., the new feature of annual spring meetings for agricultural discussion, and the general healthy and progressive tone of the debates and resolutions of the Convention, we draw favorable auguries for the future of our State Society and State Fair. The next year will, we trust, atone for the shortcomings of this.

Grange Notes, Queries and Information.

"A Master" asks several questions, which we are requested to answer through this department. We need not repeat the questions as the answers will indicate their nature:

1. No, you are under no circumstances authorized to impart the * * * to the members of any Grange except your own, or to the Master of any Grange; but you may, at the request of a Grange, instruct them in any other part of the work. If a Master has not properly received, or has lost the * * * he must get it from the Master of the State Grange.

2. A person who has been ballotted for and rejected by one Grange, cannot, if the fact be known, even become a candidate for admission into another. The exclusion from the Order is final, we think.

3. A member leaving one Grange to join another, must obtain a withdrawal card, showing his good standing and freedom from indebtedness to the Grange he leaves, and no Grange can safely admit him without such a certificate.

J. M. C., Georgia, asks how he shall proceed to effect the preliminary organization of a Subordinate Grange of Patrons of Husbandry. Write to some Deputy of the National Grange for a Charter Members' blank, and such information as he may think it necessary to give you, furnishing him references, so that he may satisfy himself of your fitness to undertake the work. When the necessary names shall have been obtained, invite a Deputy to organize the Grange.

It is believed that at the close of the present year there will be six hundred Granges of Patrons of Husbandry, with an aggregate of 80,000 members in Iowa one hundred Granges and 10,000 members in Minnesota; and one hundred Granges and 5,000 members in South Carolina, these States taking the lead in the Order, which, however, is strong also in Ohio, Indiana, Illinois and Mississippi.

We are constantly receiving inquiries in regard to the Order of Patrons of Husbandry, from Georgia and Florida, showing the planters and farmers of those States to be alive to the importance of organization and co-operation.

"Deputy." It is the duty of the State Grange, through its worthy Secretary, to furnish its Deputies with the necessary blanks and instructions for organizing Subordinate Granges. Formerly, this duty devolved upon the Deputies of the National Grange.

Miscellaneous Correspondence and Notices.

An Experiment with Jute in Alabama.

Editor of The Rural Carolinian: I received last Spring some jute seed, which I think has proved a complete success. The seed was sown broadcast on flat beds, about two feet wide, and three and a half feet apart, early in May. In ten days the plants came up, and continued to grow till they attained the height of twelve feet. Some proved seed plants, others did not. A sharp frost on the 15th October, which killed the pea vines and slightly injured the cotton, did not effect the jute which somewhat resembles a plantation of young peach trees before being separated, and removed from the nursery.

I had about one half of the plants then cut (the rest I allowed to remain to ripen their seed) and steeped in stagnant water for ten days, after which the bark was very readily stripped off from the whole length of the stalk and hung up to dry. The fibre is long and very fine and strong.

I cannot but feel that the cultivation of jute will prove a very valuable acquisition to the South. I am not prepared to say how much can be made to the acre, as my experiment was on a small scale—but at five cents per pound, which I believe is its market value in its undressed state, I should think it could be grown very profitably. A moist soil, near water courses, I think, suits it best. Cattle are not fond of jute; so it is quite independent of the "fence law."

Osmiches, Ala. J. MOTTE ALSTON.

More About the New Southern Forage Plant.

Editor of the Rural Carolinian: My communication, published in the October number of the Rural Carolinian, has called out some inquiries, which I will, with your permission, answer in your columns:

1st. I am asked if the "Beggar-lice," or "Indian Clover" referred to, is the same that is found in the woods all over the South. In reply, I would say that

there is no resemblance whatever, except that the seeds are similar in appearance. Nothing, I believe, eats the wild Beggar-lice, while all kinds of stock are ravenously fond of Indian Clover. The seed will germinate earlier next spring if scattered over the ground in the fall, though the ground need not be broken till spring, or it may be sown with small grain and ploughed in. It will make a fine pasture when the grain comes off. I may have over-stated in saying that it fattens more rapidly than peas. It is equal, at least, and much more certain, with no trouble or expense, after once being planted, except to break the ground every spring. I shall send a few quarts of seed to persons who desire to test it, and I hope they will report the result of experiments to you, as I think it will prove to be invaluable to Southern farmers. J. M. STOKES.

Model Farm, near Madison, Florida.

Strawberries for Amateurs.

EDITOR OF THE RURAL CAROLINIAN: I take pleasure in the reading of RURAL CAROLINIAN, and although just now I write but little, yet occasionally a thought, on reading, touches me so that I hesitate to let it go by. Therefore, in your November number, I find a word on Strawberries, and with it wish to advise planters to *try* the Ida, Lady Finger and Nicanor, in addition to your general advice of Wilson. These all have strong roots, unlike the class of our foreign varieties, as Triomph de Gand, Napoleon III., Jucunda, etc. These latter, let me say however, along with Princess Royal, (the superior of them all,) should only be grown by the man who cares more for the beauty and perfection of his fruit than its cost per quart. The others, I advise, I think are equally hardy as Wilson, and will give satisfaction, especially to that general class of cultivators, who grow for themselves, but not specially for market. F. R. ELLIOTT.

Cleveland, Ohio.

Nicanor is the earliest strawberry we have, and in the *number* of berries it will produce, beats everything we ever planted, but with us, so far, the fruit has proved very small, and lying very close to the ground has ripened imperfectly.—ED.

What a Florida Lady is Doing with the Guava.

EDITOR OF THE RURAL CAROLINIAN: As some of your readers are becoming interested in the culture of the "Guava," I will give you an account of what a lady in an adjoining county is doing in that line. I give it as I heard it from a minister, recently from her house, and am sorry that I cannot specify the exact proceeds of the crop up to this time.

She has twenty bushes; has shipped twelve bushels of fruit, for which she received four dollars per bushel; has made up about one hundred tumblers of jelly, which brings her four dollars per dozen, wholesale, and a like quantity of "marmalade;" and she thinks her crop is only about half gathered. The total amount of the fruit crop is estimated at forty bushels.

The Guava plants can be set at seven or eight feet apart, and taking the above yield as a criterion, who can doubt the immense profit there is in them. I know by personal experience that they will bear in two years. J. M. AULD.

Wekiva, Orange Co., Fla.

Inquiries and Answers.

"A New Beginner" desires to know which is the best fertilizer to use on gray land, for cotton; also, what will cure a mule of worms. 1. In regard to the best fertilizer, we suspect scarcely two persons in a hundred will give the same answer, some thinking one the best and some another. We have given, in various back numbers, the experience of planters in the use of commercial fertilizers and shall be glad to give further results of experiments carefully tried and briefly but clearly stated, the kind of soil being always mentioned. 2. Linseed oil, given in half pint doses, every morning, is a good and harmless remedy for worms in a mule or horse. If this quantity do not relax the bowels, it may be increased, but only enough to render the animal slightly more loose than usual.

——— M. E. L. None of the Alpine Strawberries succeed in our climate. They require a degree of coolness and moisture combined, which are not attainable here. We have obtained a small crop from plants procured from the North and planted in the fall, but they alway, unless in a partially shaded spot and frequently watered, have all died during the summer. Lennig's White has failed to withstand the summer heat and drought with us, on a sandy loam, but succeeds well, we are told, on a clayey soil, near Augusta, Ga., and elsewhere.

———Mr. Geo. L. Branscone, Davis Mills, Benton Co., Miss., writes that he has raised the red or Mexican cotton for the last three years, and finds it hardier, more prolific and capable of withstanding drought better than any other variety. We have no personal knowledge of this cotton, and, therefore, express no opinion in relation to it. Persons interested in it, or desiring seed for trial can correspond with Mr. Branscone.

———S. F. C., Bandera, Texas. Since your inquiry, made sometime last summer, in regard to an analysis of the field pea was received, we have made diligent search for such an analysis, but can find none. During the coming season, we will endeavor to have an analysis made, as the chemical relations of that plant to the soil are very important.

———Mrs. C. The hybrid Perpetual, or, as the French call them, Remontante roses are like what are called June roses, except that they are *supposed* to flower continuously. They do not do this, but they remain longer in bloom than the others, and if the flowers are cut off as soon as they fade, or before, they will bloom again in the fall and winter.

———A. C. McK. asks: "Can you or any of your readers tell me the cause and remedy for what is commonly known as "salt sickness" among the cattle on the coast, and more particularly on the sea islands?

———J. L. H., Milledgeville, Ga. We think Mr. W. G. Mood, Jr., corner of Meeting and Market streets, Charleston, could supply you with any pure bred poultry, of the most desirable breeds, that you may desire.

———We beg * * * * and others to accept our thanks for crop reports; but we received so few that it did not seem worth while to publish any of them, as no general estimate could be got at through them. In regard to putting ashes in the cow lot, we should not do it. Better keep them seperate, under cover, or compost with muck.

General Notices and Acknowledgments.

B. K. Bliss & Son, No. 23 Park Place, New York, have laid us under obligations by a very acceptable and seasonable assortment of seeds and roots which will furnish us with pleasant reminders of their generous remembrance every time we visit our garden during the season. The standing of this old and well-known firm needs no endorsement from us. Its reputation is not of to-day merely, but has been built up by many long years of energetic and enterprising business effort and uniform fair and liberal dealing.

Briggs & Bro., Rochester, N. Y., are gentlemen who never allow themselves to be outdone by anybody in their line, and, having been to Europe and brought home an immense collection of Dutch Bulbs and other florists' stock, they don't forget the poor Editors, who, as they know, have no money to spend for such things, much as they desire to have them. The packages they have sent us are very thankfully received, but they make us wish we could send them a cash order for twice as many, as we trust our more fortunate readers are able to do.

Our valued contributors have been unusually generous during the past month and many of their favors are necessarily reserved for future numbers. Among these are, "A Practical Essay on Plantation Economy," by Col. D. Wyatt Aiken; "The Guava," by E. H. Hart, of Florida; "Labor Contracts," by "Hill-Side;" and "Guano and other Ammoniacal Manures on White Lands," by Prof. E. W. Hilgard, of the University of Mississippi.

We formerly received from the good city of New Orleans a handsome, well conducted and valuable weekly paper called the *Rural South-Land*, but as we have not seen it for several months; we conclude that it has either suspended, or become so prosperous, and so puffed up by its prosperity, that it no longer deigns to exchange with a poor monthly like the Rural Carolinian. Which is it, friend Russell?

About the 10th of November our friend, Robert Chisolm, of Chisolm's Island, S. C., sent us a box of fine tomatoes just gathered from his garden. Do we properly appreciate a climate in which such a tender vegetable can grow and perfect its fruit at this season, and sometimes even till near Christmas? Thanks for the kind remembrance. We have saved seed from some of the best specimens.

We are indebted to Prof. S. B. Buckley for seeds of native trees and plants of Texas, and among the rest of the Mexican persimmon, which we have been anxious to try here.

Literature, Science and Home Interests.

THE CAVE OF THE WINDS.

PART III.

Branwell had left the ladies in the parlor, and had wandered out, not going near the falls, but hearing that tremendous monotone, which he almost thought to be the grand diapason of all the music of the world. His heart was filled and soothed, and he felt something like vexation at the intrusion when a hand was laid upon his arm. He turned quickly, and his lips parted in an exclamation of surprise when he recognized his old secretary, Morton—somewhat embrowned by travel, but still the same, free, careless, debonair, with perhaps not too much of strong principle in him.

He grasped his quondam employer's hand with the close pressure of astonishment and pleasure.

"I shall bless the fates that sent me here," he said, "though I came reluctantly enough."

"What is it, a business trip?" asked Branwell, forgiving the interruption for the sake of an hour's chat with the secretary. "And what are you doing now?"

"Oh, I have subsided into a travelling agent for a manufacturing company in New York. I came back quite penniless from my Eastern travels, and was obliged to go to work in good earnest. It's a devilish bore to be a poor devil."

"Can I help you any?" asked Branwell.

"Thank you, no; I am tolerably well provided for at present. I only hope the stars hold a fortune in store for me."

Thus strolling about the hotel grounds, the two men talked of many things, cursorily, with a passing interest in each.

Leaning against the pillar of the piazza, with a bright moon shining full upon the face of his companion, who stood opposite to him, Morton suddenly said with his flippant pleasantness of manner:

"Apparently the world has been good to you, Branwell. Your face bears the years very well: that mysterious marriage hasn't haunted you very severely, I fancy. Have you ever made the acquaintance of the bride?"

"Never," was the cold response.

"What!" cried Morton with vivacity. "Then my prophecy is not yet fulfilled; for I believe I predicted that some happy day you would chance to see her and fall in love with her."

"And I predicted that I should not," said Branwell.

"Well, it was one of the most absurd affairs I ever heard of," continued Morton, throwing away a cigar and preparing to light another. "I am sorry you still continue so sensitive about it. What is the harm in your trying to see the girl, and become acquainted with her?" And Morton divided his conversation between his companion and the wreaths of smoke he was puffing.

"You forget," said Branwell, "that I received a letter from her in which such a thing is forbidden. It would not be easy to transgress the desire she then expressed, even if I wished to do so, which I do not."

"Pshaw! nothing in the world but woman's nonsense," said Morton with manly scorn. "I'd bet a fortune, if I had it, that she had repented writing that miserable letter. Its source could only have been a whim at the time."

"Do you think so?" musingly asked Branwell, thinking of Miss Lorillard.

"Where is your wife?" asked Morton.

Branwell started at that word—it had never been said to him before.

"I don't know. You know the circumstances too well to ask that, Morton."

Morton laughed with a laugh that grated upon his companion's ears. "You are a gallant fellow," he said. "So, if you wanted to communicate with your wife, you'd be obliged to resort to the detective force for aid."

Branwell did not reply; his speculations were very bitter. He did not like the conversation, but he was not surprised at the way Morton viewed his course.

"Morton," he said suddenly, "you saw her; how does she look—do you remember?"

"Yes, I remember very well indeed," was the emphatic reply. "A man is not apt to forget the handsomest woman he ever saw. I tell you, Branwell, I never pitied you for being blind so much as I did when you stood there so stolidly with that woman's hand in yours."

In spite of himself, Branwell could not help averting his eyes as a powerful and mingled emotion swept over him. In a moment he said:

"But that isn't describing her to me."

"I can't describe her, only in a general way; she gave me an idea of extreme beauty, without my having the power at that time to tell just what her features were. But I remember very distinctly that she was tall and graceful; that she was light, and had an abundance of beautiful hair, and curious-colored eyes that almost seemed yellow—very much like her hair—an unusual color, I thought. She affected me even in that short time as being cultured in the highest degree—every inch a lady—a Howard de Howard in short;" and Morton puffed away enthusiastically upon his cigar.

Branwell's hand, thrust into the pocket of his sacque, clenched in a mute defiance of the fate thrust upon him. He stood with eyes fixed absently upon space, thinking that here was a witness even more powerful than the silent ones he had found in his uncle's desk.

"Apparently the fact that you are the husband of this beautiful woman does not exhilarate you," remarked Morton, gazing upon Branwell with astonishment.

Branwell smiled coldly, as he said:

"Her beauty is nothing to me. It appears, Morton, that you have a most superficial view of the case. To be frank with you, I must say I don't care to receive any of the congratulations one offers to a bridegroom. Hereafter you will remember that I have no wife—save a legal claimant of my name and inheritor of my property."

"A nice little situation for one who wished to play the devil generally," said Morton with a satirical laugh.

Branwell scanned the face turned carelessly away. The moonlight does not reveal plainly the finer character-marks upon a countenance, but Branwell saw what he thought were signs of more reckless, dissipated living than when he had known him.

"If you will forgive a friend's remark, Morton," Branwell said, "I should say your travels had not improved your morals. I always thought you had the elements of a kind of dare-devil in you, and I am sorry to say they appear to have developed."

Morton blushed behind his cigar.

"So you detect the hoof and horns, do you?" he asked; then deprecatorily: "But I'm not such a bad fellow after all. In proof of which, I am very glad to have found you here, and shall take advantage of that excuse to remain as long as possible. Are you here alone?"

"No, I am the escort in general of an aunt, two cousins, and a lady friend of theirs. Will you go in and finish your smoke in my room?"

"I believe not; I am tired and shall go directly to bed. I hope in the morning you will honor me with a presentation to your fair charges. Good night."

The two separated in the hall, and Morton went up stairs; but Branwell returned to the piazza and lingered latest of all the loungers.

In the morning, at breakfast, Branwell watched the door for Morton's entrance, curious beyond words as to his appearance when he should see the lady whom he had described the night before. But, as is often the case when one watches, the looked-for one did not come.

"Mr. Branwell, are you looking for a friend?" asked Miss Lorillard after one of his glances at the door.

"I met an old acquaintance last night, and I've been betrayed into turning round to look for him every time one has entered," he answered.

He could not tell why, but he looked fully and suspiciously at his companion as he spoke. She met his glance with limpid eyes, making some commonplace remark as she did so.

After breakfast the ladies were in the parlor laying plans for the day. Branwell lounged round, expecting the appearance of Morton.

At last Morton emerged from the breakfast room, looked round, saw Branwell, and approached.

"I was expecting you," said Branwell, "for I wanted to present you to the ladies before we went out, and invite you to accompany us."

"Yes, I am impatient for that honor," said Morton, fingering his watch chain nervously, "but I am afraid I shall not be able to go out with you, as I have business this morning."

"Never mind, then. But you were a gallant fellow of old," responded Branwell, "and I know you want to see the ladies."

The two entered the parlor, where were half a dozen ladies reading and talking. Though Branwell was conscious of the presence of all, yet he saw only Morton and Miss Lorillard. The latter was standing by a window, and did not turn as the gentlemen came forward. Branwell saw Morton glance around the room, then his eyes fastened upon Miss Lorillard, whose figure was clearly defined against the window, and his face lost its look of carelessness and became startled and earnest; he even made that involuntary cessation of all movement which is so natural to surprise. It was evident that he felt Branwell's eyes upon him, and it was probably for that reason that he appeared slightly constrained, as an actor will sometimes appear.

Mrs. Richmond met them near the door, and after a few words with her, they advanced to Miss Lorillard's side, who, knowing that there were people in the room, did not notice their approach.

Branwell touched her arm, saying: "Pardon me for interrupting a revery, but here is a friend of mine who wishes to know you."

Miss Lorillard turned with a quickness of motion unusual to her. Was it the abruptness of Branwell's address that gave that look of something resembling dread and fear to her face? But it had left it instantly, and Branwell did not see it, for his eyes were fastened upon Morton while he presented him to the lady.

Morton's face crimsoned as he met this lady face to face, and he bowed in such confusion that Branwell half pitied him; then he looked at Branwell as if beseeching to know how she came here, and if Barnwell knew who she was. But Branwell's face was impenetrable, save that it was vigilantly watchful.

That expression seemed to restore Morton to his self-possession, and in a moment he was gay and nonchalant again.

As for Miss Lorillard, she greeted him cordially, as it became her to a friend of Branwell's and suavely and graciously as it became herself.

Branwell lingered near, joining in the conversation, betraying nothing of the conflict within him. It was arranged that they should go down to the falls that morning. Morton could not go, and when Branwell saw him alone for a few moments after they left the parlor, neither said anything concerning the lady, and it was plain Morton had decided not to mention her, and Branwell tacitly acquiesced in that silence.

It is not pleasant to visit some glorious shrine of nature with superficial souls like those embodied in the aunt and cousins Branwell was obliged to escort, and he took refuge from their exclamations as they stood by that eternal wonder of water, by turning to Miss Lorillard, assured that her tact, if not her feeling, would never allow one ill-timed word to be uttered in such a place.

He stood silently by her side while the garrulous ladies wandered along the banks, venting their admiration by interjections, which rasped upon his sensitive love for this place.

"Miss Lorillard," he said at last, turning toward her where she stood leaning against a tree, a slight wind lifting the hair from her temples, her eyes fixed, with the languor that was now perceptible in them when she was quiet, upon the opposite shore, leaping by their glances beyond this scene into some imaginary world—a world inspired by the sound in her ears and the consciousness of where she stood; for whatever of principle she lacked, she had within her the fine appreciation of beauty which leads one to look for the sense of right which ought to underlie it.

Her eyes brightened as she turned to Branwell, and listened to what he should say. He saw that awakening lustre and felt that it was involuntary.

"I am going to propose that we go down into the Cave of the Winds," he said. "Will you accompany me?"

"Yes," was the unhesitating reply.

"But I warn you that the descent has an air of peril, if not its reality; that as a general thing ladies consider it proper to decline."

"I should like to go," she said; "I am not nervous."

Branwell went forward and invited the other ladies to accompany him, but received a horrified refusal.

Half an hour after, clad in that grotesque costume of rubber, they were slowly descending the path behind their guide. All the pallor had fled from Miss Lorillard's face; it glowed with bright color, and her eyes shown in prospect of this slight excitement. Branwell could not but notice, as he took her hand, how thin it had grown; and the thought made him pause and say:

"This is thoughtless in me. This journey is for your health, and I am taking you where your nerves will be strung to an unnatural tension."

There was almost tender concern in his voice, and the tone made her eyes melt as she heard it.

It was true there was something in this man that affected her as she had never been moved before. "Do I love him?" she asked herself with a smile of amazement and self-pity.

"You need not be anxious," she replied; "my nerves are made of strong stuff. It is not quiet, it is excitement that I need. I am dying of quiet." She spoke the last hastily and with emphasis, as if she were speaking to herself; then breaking into a smile as she saw his look of surprised anxiety, she said: "It is you who are to blame; you have taken a freak to call me an invalid, and I am becoming irritable like one."

Branwell felt the spontaneous naturalness of her words; for the first time he fancied that he noticed almost a haggard look around her eyes. With a solicitous smile that made his face very attractive, he drew nearer her, yielding to an unusual feeling. He bent his head and kissed the fingers he held—kissed them with a long pressure that made her blush, and she was not an unsophisticated girl to blush at a gallant touch.

Then he led her on, and they reached the rocks of the way, over which Miss Lorillard sprang, eager to reach that cave of sublimity.

The rush, the swift, deep, sound, as they neared the entrance, did not disconcert her. And when they reached the sheet of water, and plunged through a portion of it, she felt Branwell's arm about her, though she felt strong of nerve enough to have pushed through that perilous place unaided.

Once past that strange portal, and they stood within the lofty cavern, mute, motionless. The thunder of the place, the intensity of the rush, for the first instant deprived them of all thought, leaving only the mere fact of existence. They stood with faces turned toward the sheet of water which poured over the entrance a curtain of everlasting glory, misty, with a faint translucence that gave to the cavern a soft light, revealing its dark walls, its mighty arch of roof. The deep, the unspeakable sound seemed not merely to hear but to be filled with, and to have changed their existence to one in which the never ceasing roar was a condition of being. The warm summer land above was far away—that was a dream of pre-existence; and this cool

place of mist and sound, of grandeur and novelty unutterable—this was real, so real that whatever an after life might be, this could never be effaced, never grow dim.

For a time they stood without thinking of moving; then, with a deep breath, Miss Lorillard raised her hands to her face, held them there a moment, and turned back into the cavern with an awe that could hardly be called curiosity.

A few yards behind her she dimly discerned two more figures; they had then been preceded by others. She made a step backward, resolutely battling with the furious, rushing air that had been striving to take her breath. Branwell did not notice her movement; the guide was gesticulating concerning something.

In that one step Miss Lorillard had gained a glimpse, though indistinct, of the figure of the woman who was standing with her guide but a pace or two away.

With an exclamation which, though smothered as it instantaneously was by the winds, still reached Branwell, Miss Lorillard pressed her hands together and almost fell to the rocky floor. But she fell into the arms of Branwell, who supported her for a moment, believing that his fears were true—that she was too nearly ill to have come here. Her triumphant resolution restored her to strength, or the semblance of it, and their guide, with a gesture of authority, threw his arms about her and went toward the entrance, leaving Branwell to follow as he best could. Pushing forward perhaps too carelessly that he might be near Miss Lorillard, just at the entrance, where that column of water falls, he slipped, and would have fallen into some abyss of seething horror had not a hand, firm as soft, seized and held him until ne could steady himself. He thought there was something divine in the touch of that hand, for he had not known any one else was in the cave. Staggering, he yet turned his head partially, and, despite his wrappings, he dimly saw a slight figure close to him supported by a guide. Then all three pushed on and reached at last the outside.

It seemed to Branwell that he had been there hours, but it was only a few moments.

Following the unknown and her guide, Branwell reached the path upon the land that led through the greenery. Up the path he saw Miss Lorillard sitting awaiting him, but he turned back, curious to see the woman who had aided him. She was very near to him, but he could see but little of her face, and that disguised by her uncouth garments.

"Though the aid you gave me was slight in itself," he said, extending his hand and touching her arm, "yet it saved my life, and my gratitude is such that I plead for the privilege of knowing you. I thank you with the emotion of a heart whose danger is yet near."

"You are then in love with life," she said; "in that case I am glad my hand was ready."

"If I cannot see her face, I can at least remember her voice," he thought.

He could not speak to her again, and he was vexed that he should have said but the veriest common places. Miss Lorillard was awaiting his return, seated on one of the benches by the path. Her guide stood near her, and was pouring forth a voluble description of some part of the scenery, but she did not hear a word. Her eyes were fixed with a strain upon the figures of the lady and her guide, who were preceding Branwell up the path. The ungainly dress in which all were enveloped was a disguise, and yet Miss Lorillard's nerves had become so unreliable, from illness and excitement, that in this place they were constantly on the alert. The unknown lady stopped, panting to recover breath. She bent and picked a spray from the vine of an everlasting pea that hung drooping over the path. When she rose again she unloosened the hood that confided her head and threw it back, and the flickering shade and sunlight fell upon her uncovered face. Thus she advanced along the way and passed by Miss Lorillard, who sat utterly white upon her resting-place: it seemed as if she almost shrank as the girl passed, her dress just touching hers. As for the latter, she glanced casually at the lady sitting there, then glanced again with a quicker look of admiration, for Miss Lorillard too had thrown back her head-covering to give to her trembling lips all the air they could get.

It seemed nothing; it was all in a moment; and yet Miss Lorillard, half invalid as she was, leaned back, hurriedly breathing, her very lips whitening. Branwell came up instantly, in time to see the lady turning out of sight round the corner of the path. He had a rapid glimpse of dark hair, a dark face bent somewhat to the blossom she held in her hand, and she was out of sight.

He turned to Miss Lorillard and uttered an exclamation of alarm as he saw her snowy face, the strange look of her eyes, which were fixed on him with an expression he could not fathom.

"I cannot forgive myself," he cried, sitting down by her, taking her cold hand in his. "It was I who urged you to this, and now you look as if all strength had left you."

The unhappy woman struggled for the composure which she could not remember ever having so lost until at this time of all others, when she was so cursed with physical weakness. At last, looking up in his face with a smile, she said:

"It is not your fault, Mr. Branwell. It is my own that I did not think of the reaction. But I do not regret it. It is worth shortening a lifetime to have stood within that cave. Shall we go on now?"

At supper Miss Lorillard did not appear until late, but Branwell escorted his aunt in and sat down beside her. Perhaps he prided himself a little upon his ancestry on the side of the Branwells; any way, he was a trifle annoyed by the plebian volubility of this aunt, who had none of the Branwell grandeur about her, being no Branwell, but a half sister of his mother's, and her long residence in a distant part of the country had assisted her in forgetting many of the customs of the best society—supposing she had ever moved in it.

Branwell listened deferentially to her subdued rattle of conversation, not visibly vexed until in an inadvertently loud voice she said:

"There is but one stranger at the table to-night. Do you see her, William—that dark girl near the fat gentleman?"

That the girl heard he could not but think, for she gave a furtive glance and a half smile up that way, then looked down again. Branwell did not know his look was so marked—his surprise and indignation prevented that. He saw it was the same girl he had met in the Cave of the Winds, and that fact made him scan her with a vivid interest. He did not know what he had expected, but he fancied he was a little disappointed. He saw a very dark face, yet not a Southern one; darkest hair without being black; a forehead wider and fuller than is the received standard for woman; horizontal brows; eyes which he could not see, save that they were fringed with darkness; a passable nose; lips that lacked the full redness of Miss Lorillard's, but that were thinner and of that deeper crimson of a brunette, and that had a sweetness and a pride, the latter enhanced by the firm cutting of the chin.

She sat quietly waiting to be served. In the hasty look she had sent towards Mrs. Richmond, she had not noticed Branwell, who had leaned far back in his chair; but now, probably feeling the gaze upon her, she looked up suddenly, seeing him for the first time. A painful crimson—and it did not seem that of confusion or resentment, but of superlative astonishment—covered her face, even to her brow; then it subsided, leaving her white, but very quiet, with no other sign of emotion. Branwell's gaze was withdrawn the moment she had looked up, but he had seen that blush, and wondered at it. Just then Miss Lorillard swept into the room, her toilet irreproachable, a forced animation in her face, a lustre in her eyes. Branwell thought as he watched her:

"Who would not envy me the right of saying of this woman, she is my wife?"

She came to the empty chair at Branwell's right; with one hand on the chair, she glanced casually down the table until her eyes rested upon the dark girl whose large brown eyes were now raised and looking full at her. The servant waiting respectfully until the lady should please to be seated, thought she was faint, and instinctively reached her a glass of water. She sat down and raised the water to her lips, her heart whispering:

"The fates are against me; I can no longer trust to my self-possession, and satan himself wills it that I love this man."

Then she exchanged a few words with Mrs. Richmond, no frown ruffling her brow, her lips smiling, though a sharp physical pain, like a knife-blade, seemed stabbing her side through and through.

"You do not eat anything," said Branwell at last; I shall soon consider that travel was precisely the thing you did not need."

Miss Lorillard, to whom the act of swallowing had been almost beyond accomplishment, was glad of the opportunity of laying down her knife and fork, and saying:

"In truth I am not hungry. Will you fill me a glass of wine?"

Holding the glass in her hand, Miss Lorillard smiled down into it, saying, as she saw the girl opposite rise:

"I have noticed a new face to-night, and but one, for a wonder—the girl just leaving the room? Who is she? do you know?"

Miss Lorillard sipped her wine slowly as she listened, but she saw him watching the girl as she left the room. She was almost as tall as Miss Lorillard, and her figure was as graceful, but with as different a grace as were their faces.

"That young lady must be remarkable," replied Branwell. "My aunt instantly spoke of her, and now you ask who she is. I am sorry that I don't know. I only know that by a touch of fate she saved my life in the Cave of the Winds. I was going blunderingly over the edge of the rocks."

"She saved your life!" exclaimed Miss Lorillard, more moved by that announcement than he had expected. "And what do you mean by a touch of fate?" she resumed more indifferently. "Is she endowed with some magical power, and did she touch you with her wand? She was in the cave when we were there?"

"Yes. To translate, she grasped my hand just as I was ready to fall, in consequence of an ignorant step, and saved me."

"She must be a very muscular young lady," said Miss Lorillard.

"She was supported by her guide."

"Well, Mr. Branwell, do you know you have given me a very fine nucleus for a romance?"

"I am aware of that. Your phrase reminds me of the time when you used almost the same words to me, a long time ago, when I thought a few days would part us forever."

She looked inquiringly, and he said:

"It was on the steamer when I had told you of that strange case of a man who married a woman he had never seen."

It was said with such apparent unconsciousness that Miss Lorillard felt the blow dumbly; wondering blindly what this man could mean.

She bent her head to taste the wine again, saying:

"You have a remarkable memory. You cannot flatter me by saying you treasure all my sentences like that."

Miss Lorillard escaped to her room as soon as possible. She took from the trunk a case containing a row of small vials; from one she turned a few tiny pills, which she swallowed with a smile upon her lips that had already forgotten their wine and grown pale.

"These never fail me," she said, putting the vial back, and looking in the glass with a bitter contraction of her brows, as she saw the pallor of her face, a pallor that assailed even the mouth.

"Is Heaven sending me this strange illness?" she exclaimed, "or is it a pastime of hell itself? What demon laughs when I stammer and change color—I, whose coolness has been a marvel even to myself?"

The next day, at night, she was walking down to the falls with Branwell, who remarked that he had been mistaken in his idea that travel was not good for her. She seemed almost to have recovered her health, for her face was brilliant with transparent carmine and white, her eyes were luminous and clear.

From a turn in the path a figure emerged, and met them in the way, walking rapidly toward the hotel. It was the girl whom they had met at supper the night before.

Branwell turned to look after her, and Miss Lorillard said: "You have doubtless discovered the name of your preserver?"

"No; have you been more fortunate?"

"Yes, thanks to the indomitableness of a woman's curiosity. She is a Miss Eytinge from Georgia. I fancied she was Southern, from her face."

"But I did not," said he. "Is she here alone?"

"Apparently. But my researches did not go beyond my inquiries of a lady whom I know slightly. After my question she volunteered the information that Miss Eytinge is quite attached to the place, and spends a portion of her summers here nearly every year. A devotee of the Falls."

When they returned to the hotel, they saw this girl upon the piazza talking animatedly with a group of ladies and gentlemen, and Branwell, as he looked, hardly recognized it as the same face he had seen in repose at the hotel table. Flashing, radiant, her whole face was illuminated by her eyes, by the play of lips; and the two new-comers heard her voice, a voice which it is impossible to describe, for there seemed both a woman's and a child's soul in it—pure and soft, with a cadence like that in a gleeful child's tone, but with something running through it, a fibre of the intensest pride of womanhood—a suggestion of the possibility of the finest and proudest ring; and withal a voice as utterly natural as if she was but five years old.

Miss Lorillard listened for a moment, her face masked in polite interest. When the girl had finished her recital of the incident she was relating, Branwell said:

"Are you a judge of character, Miss Lorillard? Read me that lady's face."

"I should find nothing there but truth and honor—perhaps an unusual richness of nature," was the reply—Miss Lorillard well knowing that truth was her best policy.

With a pang of absolute pain she saw the glow upon her companion's face, and knew that she had but uttered his own thoughts.

The group near them separated, and Miss Lorillard entered the house and went up to her chamber, feeling an impression that at this moment, notwithstanding all her wishes and all her power, the man whom she loved thought of this girl with an attraction stronger than she could ever make him feel. It was true, Branwell lingered in the room as only people in a hotel can linger—listlessly, with no apparent object. He was resolved upon knowing this girl whom Miss Lorillard had called Miss Eytinge, whose touch he remembered so well. At last he saw that one by one the people who surrounded her had sauntered away; she stood with one arm round a vine-wreathed pillar of the portico, her fingers hidden by the leaves, which drooped over her face also, as she looked outward upon the moonlit night, with an outlook which was faintly a remembrance of other scenes; while penetrating everything of house or grounds, was the roar of the Falls.

Branwell was but a few paces from her; as he looked, a strange, a powerful warmth penetrated his heart, an absolute longing to know her. He would have given some part of his life to have held her hand fast clasped in his; and this feeling was so strong, so vivid, that he never thought of it as being strange or unusual.

He advanced to her side; she turned her eyes upon him without changing her position, and their glances met with that unfaltering, profound look with which those of soul kinship recognize each other, Her eyes were the first to fall, and as they did so, a pale, beautiful blush colored her face, which that moonlight was bathing in loveliness.

Without thought of embarrassment, Branwell drew nearer and held out his hand, saying:

"Give me leave to present myself as one who owes such gratitude that he waives ceremony; for I cannot, unconventional as is the fact, feel a stranger to you."

Every accent conveyed to the listening girl a conviction of his sincerity. She placed her hand in his, but she did not immediately speak. The touch of that hand to him, the sense of holding it for one fleeting instant in his own,

palm to palm, softly and warmly, thrilled through his heart with a power that nothing had ever made him feel before. His gray eyes poured light upon her—the light of an indestructible interest, an endless good-will. Branwell felt a relief which he did not at first acknowledge for what it was—the reaction from the society of Miss Lorillard, which had held him in fetters forged by art. Here he felt the untrammelled sense of nature, exquisite, refined to the last degree, but as truly nature as the rose that blooms double and glowing in the garden is verily as much a rose as the paler sister that blooms by the dusty road. He did not think of suspecting the genuineness of the girl whose hand he had just touched, any more than he would have questioned the purity of a lily. For the time, as he stood with her, he entirely forgot the existence of Miss Lorillard.

"Our meeting was in so strange a place that we might easily be justified in becoming acquainted without the aid of conventional usages," she said, in assent to his words.

"Then I may consider that we are legitimately acquainted, so that I shall have no fears of being passed by unrecognized in the future."

"You shall have no fears," she replied.

"It is then a compact?"

"It is a compact," was the answer.

Just then two ladies rustled along the piazza and out on to the path that led across the lawn. They were Miss Lorillard and Mrs. Richmond. The eyes of the former, though she was evidently giving all her attention to her companion, saw the two standing by the pillar, saw the something indescribable in Branwell's manner which told the attraction he felt.

The glance of his companion followed the two ladies until they were out of sight, then she turned to the gentleman and said:

"There seems something familiar to me about that beautiful lady—something, it seems to me, more in the peculiar grace of her manner than in her face. I must have dreamed of her, or beheld her in that life which we fancy we have lived before."

Branwell's face showed that the current of his emotions had been turned to some gloomy channel; the bright light had gone out, and the girl looked in surprise at him.

"Who is she?" she asked.

"She is Miss Lorillard," he said, and noticed that she started perceptibly as he replied.

"Miss Lorillard? Where is her home?"

"In Massachusetts, I believe. Is it possible that you have met her?" he asked rapidly.

"No, oh no; it was a dream. But she is a countrywoman of mine."

He looked up in unmitigated astonishment.

"A countrywoman? But I thought you were Southern—a Georgian."

"That must be the fault of my complexion," she replied smiling.

Ere Miss Lorillard returned from her walk with Mrs. Richmond, Branwell had left his new acquaintance, and Miss Lorillard saw her reading in the parlor as she passed by the door. Mrs. Richmond went on up stairs, but Miss Lorillard stopped involuntarily at the door and looked in at the room entirely deserted, save for the girl, who leaned back in an easy-chair, her eyes upon the book she held. Lightning gleamed in Miss Lorillard's gaze—a scathing, lurid look that might have blasted her on whom it was directed.

"One swift shot of a pistol held in my hand," she thought. "Now I could do it; not a nerve would tremble; but I never, never shall. If hate could kill! He has seen her, he will love her. What a rival I have!"

Miss Lorillard stood as if fascinated. Suddenly the girl raised her eyes and encountered that look. It sent a shudder through her; but the look, before she had hardly seen it, glanced off, and wandered round the room as if in search of some one; then Miss Lorillard glided up stairs.

The girl dropped her book, rose and walked to the door, looking up to see again that face so evil in its beauty; but it had gone, and she commenced walking up and down the room with a slow pace, each step seeming a thought of Miss Lorillard—a wonder in what way their lives could clash—a fear, and then a proud self-reliance. The girl's thought's wandered back to all the days of her past life—days which her own superabundant vitality had filled with freshness and happiness, though the incidents were few. It was Miss Lorillard who had sent her thoughts backward, filling her mind with a wonder, an unsatisfied curiosity, for which she could find no reason.

The next day, and the days that followed, revealed to this girl that Miss Lorillard loved Branwell—revealed it with a clearness that was undoubted, in spite of the suave concealment that was a part of Miss Lorillard's nature. And those days showed also to Miss Lorillard that Branwell, whose manner had almost promised a tenderness to her before he had seen this stranger, was under an influence before which her powers were powerless; that he was drawn unwittingly to the side of the girl; that he listened to her voice as he had never even in his most infatuated moments listened to the woman who would have sold her soul to charm him; and more than all, Miss Lorillard knew that he did not know his own heart, for his feelings had not recalled to him the tie that bound him.

She had studied well the character of this girl who suddenly appeared; she knew the pride that had hitherto controlled her life, and she knew also that no emotion of tenderness had previously risen to be battled with—never yet at least. With death in her heart

Miss Lorillard cursed the mischance that had brought about this meeting just as success seemed for the first time faintly dawning upon her. Now she had a double force to fight—his indifference to her and his growing interest in the stranger. But with a perseverance, an energy that well might promise success, she was prepared to forge the last link in that chain she had been weaving; and doubly strong should that chain be, for she loved Branwell with a strength that sometimes comes to those false and hollow in every other way.

"How happily the days of Thalaba went by." Life for Branwell had waited until now; now its fruit had ripened. High in the purple heavens hung the censer of love, and its perfume filled the air. The hour of dearest romance, of profoundest feeling had dawned for him, and blindly he knew it not. It was this ignorance that made his happiness—a vague feeling that filled him, and for the time gave no room for doubt or regret.

He sought this stranger every day. His aunt had taken no fancy to her and did not cultivate her at all, for which Branwell was grateful.

It was surprising how Miss Lorillard's health had improved — apparently. There was a flush and a brilliancy about her, though she grew thinner and thinner.

At first she had proposed that they leave Niagara and go on, but Mrs. Richmond was charmed with the place, and could not think of leaving; and was not Miss Lorillard's health improving; and Miss Lorillard would not go and leave Branwell there.

A month, two months passed. Flitting travellers at the Falls might see the same party daily at the table of the C—— House. Mrs. Richmond, at last tired of the place, was proposing a change, to which her nephew listened with so much indifference that the lady was almost despairing. Meanwhile, Branwell, for the first time in his life felt it almost impossible to leave a place which still held a woman for whom his interest was becoming uncontrollable. At that first mention of departure, the cloud of soft oblivion which had hidden his past and concealed his present feelings from him broke apart, and its rifts discovered to his soul a feeling which had possessed all his faculties so completely that he had not recognized it. And for the first time since his marriage he really felt his chains.

That evening he had been walking by the river with his new friend. His newly awakened consciousness gave him something of a *distrait* air, and a painful and penetrating silence fell upon them. Branwell felt that he could not be in this girl's presence without betraying what he felt, and he shrank from such a confession.

That night, as he stood with her hand in his to bid her good-night, he had resolved that he should leave the place on the morrow. Perhaps that resolution gave a strength to his eyes and voice, an inflection to his words that was as impossible to quell as to subdue the pulses that throbbed, the wild wishes that clamored to be expressed. But he said nothing; his words were the common farewell of a friend, and one overhearing them would not have said, "That man loves her," unless his burning glance had told the story.

"My good-night is my farewell," he said at last, "for I go away to-morrow."

Her pride rose to prevent the betrayal of anything beyond an ordinary warmth of feeling. He perceived it without knowing its cause, and his soul seemed frozen within itself.

"Good-by," she said, her hand dropping from his, and her head turned, looking off beyond into some invisible land into which he could not enter. She showed no surprise that he was going, and asked no questions. Yet still he lingered, with a desperate feeling that he must say one word more, though what he hardly knew.

"If I could tell you of the many things in my heart, Miss Eytinge," he said hurriedly, wondering what there could be in his words to cause that surprised arch of eyebrows; then leaving everything, he said again, "Good-by," and left her.

Hurrying up the stairs, in the upper hall he met Miss Lorillard, who said:

"I was waiting for you. May I see you a few moments?"

Branwell, full of other thoughts, thinking with despairing happiness of the last touch of the hand he had just relinquished, the glance of eyes he had foregone forever, would have excused himself for the present; but looking at his companion, he saw that some deep resolution had induced the request, and with cold politeness he replied that he was at her service. She led the way to a private parlor, and sat down by a table instantly, as if fearing that she could not support herself. Her manner was very composed, however, and full of hauteur. Branwell stood by the empty fireplace, leaning upon the mantle, waiting her words.

It was hard for her to break the silence, but at length she said:

"I have a communication to make to you, which, however strange and unwomanly it appears, you will acknowledge that it is incumbent upon me to make—though I have hesitated long."

She paused to think of the exact words she wished.

Branwell in a cold, hard tone, said:

"I listen." He was determined not to help her in the least.

"It is not likely that you have forgotten the circumstances of your marriage," she

said, leaning her arm on the table and resting her head on her hand, though her eyes were fixed upon his face.

He bowed and said:

"I remember."

"I need not recall that stormy night on the Massachusetts coast, that little farmhouse, that blind bridegroom, that marriage wherein the bride first learned something of the nobleness of him she had married. William Branwell, I am that wife—that wife whose pride prompted the letter she sent you, but whose heart was touched by your words, your face, even on that first night that she saw you. But I had placed the barrier between us, and I could not bear that pity, that duty, should make you kind to me. Before I saw you, I thought that nothing could induce me to feel differently from the feelings I expressed in that letter; but from that first meeting on the evening of our marriage, I felt that it might be possible that I should repent penning those words. Do not think me unwomanly, for in my heart of hearts I do not feel that I am. I could not bear to present myself as a stranger to you, declaring myself your wife. I retained my maiden name and purposely embarked in the same steamer for America. I rarely lost sight of you for long at a time. I usually knew where you were, and at last I decided to become acquainted with you, to let you see Mrs. Branwell, for I knew you could not know her." Her voice wavered a little and she colored slightly as she went on.

"I did not know but some kind thoughts of me might come to you; for it is true that some have seen that in me which attracted them—men for whom I could not care. It appears reserved for the man I married—of all men whom I have intimately known—to be indifferent to me."

Branwell had left his position opposite to her and was walking back and forth, his head bent, listening to these words. There was no tenderness in him for her; now that she had said this, she even repelled him. He would have given worlds had it been otherwise, but he could not help it.

He looke at her without stopping his walk, and said hardly:

"You are then my wife? You were Fermor Lorillard, my uncle's ward?"

Her eyes, large and bright, met his.

"I am your wife—I was Fermor Lorillard. You have said it."

He ignored all the suggestions of tenderness that had been in her words. Now finally he was to have the truth, the plain truth, and no more suppositions.

He stopped and leaned his hand on the table opposite her.

"This is a serious affair," he said. "You do not expect me to accept a story of such a transaction without proofs?"

"Assuredly not."

"The most full and satisfactory?"

"Certainly."

Miss Lorillard rose and looked at him. Branwell could not help being stirred by admiration, and she saw it.

"Mr. Branwell," she said, "does no instinct, no intuition tell you that what I have said is true?"

"You wish me to reply with simple truth?"

Her lips trembled slightly as she said:

"Yes, the truth."

"Well, then, on the contrary, all the instincts of my nature tell me it is not true."

She held tightly by the chair in which she had been sitting.

"That is because you do not love me," she said.

He was silent, and after a moment she said: "I would say nothing as if I reproached you. Question me, for I feel unable to talk unless you do."

"We will send for Morton, who was one of the witnesses," he said. "I left with Mrs. Branwell the certificate of our marriage. Has she it still?"

"She would not have easily parted with it," said Miss Lorillard, walking toward the door and leaving the room.

Branwell heard her go to her room. When there she poured some wine into a glass and drank it hastily, then took a paper from her desk and retraced her steps. Meanwhile Branwell had been standing almost motionless by the table, his soul struggling with the cloud of darkness that enveloped it. His whole existence refused this destiny thrust upon him. He fought with it as if he would awaken from a dream, horrible as it was real; and from amid all he saw one face, heard one voice, for whose smiles, for whose words he would have perilled all he held dear. And when Miss Lorillard entered he started as if she had not been one of the most beautiful of women.

She had a paper in her hand, which she held toward him in silence. He took it detesting it with hatred. He read it—every word.

This certifies that the rite of Holy Matrimony has been celebrated between Mr. William Branwell of Dorchester, B. P., and Miss Fermor Lorillard of C——, Massachusetts, on the 15th of October, 18—, at C——, Massachusetts. By Rev. B. W. Wrayburn.

Witness: John Morton. Witnesses: Louise Clitheroe, Mrs. Hannah Trask.

He gave it back to her saying:

"What you have said appears in every way reasonable. I do not dispute it. We will await Morton's arrival. He was to have been back to-day." Then seeing the distressed look upon her face he continued:

"You will pardon me my seeming incredulity. I could not but ask for proofs concerning the most important incident in my life."

"Believe me," she said earnestly, "I would not have it otherwise. I would not wish you to take my mere word for what I tell you."

As she uttered that phrase, he thought how different it would be did he love her, with what intensity of happiness he should have read that certificate which now seemed a paper of doom to him. He thought with desperation that he never would acknowledge this woman as his wife—never, though all the world united to declare the fact to him.

She had seated herself again in the chair; but now she shaded her eyes with her hand. The wine she had drunk hardly increased the the excitement she felt. Every drop of blood in her seemed bounding with such fiery throbs as almost suffocated her; her lips and cheeks burned hotly, her eyes glowed, but outwardly she was calm. It was he who stood with glittering eyes, the effort at calmness plainly visible. This hour of all the hours in his life was hardest to bear. He was vainly struggling for some honorable retreat, some ray of light to illumine this blackness; but he saw no retreat, no light, nothing but to endure, to shut forever from his thoughts every remembrance of the girl he had just met, for thoughts of her only made more unendurable his future. He did not think how hard, how icy he must appear to this woman, who in her own words told him that she loved him; he only thought of her unwelcome claim upon him; he only rebelled fiercely against the fate he had yoked to himself when he had promised his uncle; but he never would have known the intensest bitterness of that fate had he not loved.

"You delayed telling me this," he said a last, as if asking a question—almost as if reproving her.

"I told you that I could not bear to thrust a wife upon you, until I had tried if you might not become in the least interested in her; and as I have failed in that, I might never have spoken to you, did not circumstances make me deem it necessary."

There was some appearance of embarrassment as she said the last words, and Branwell said hastily:

"You mean to intimate to me that I have given you reason to fear I might forget the bonds that hold me—that I might become dishonorable?"

"Never the last!" she cried impulsively: "I only knew that your marriage had been such a myth to you that an impression might be received too easily—cherished even without your knowledge. I will confess it was that fear—a fear that your happiness might be compromised—that assisted me to make this avowal to you. You can readily believe that I knew how unwelcome it would be." She said the last with a deprecatory motion that still had something of stateliness in it. She had risen and stood before him.

"At least," he replied, "it was not unexpected."

She moved toward the door; with her hand on the latch she paused and said, with slow distinctness:

"Having now done what I felt due to you and myself, I have nothing more to say on the subject. You will institute any investigation for which you feel inclined. I have one thing to beg, however, that you will not imagine I have told you this to exact anything from you. It seemed right that you should know."

"Stay one moment," he cried, "for me to say that any one who bears my name will not lack any attention I can consistently give. I have much to say to you at some future time."

She bowed and left the room. She had been right in judging that pecuniarily at least the wife of Branwell would not want, and that the safest as well as the easiest way had been to leave such arangements to his own sense of appropriateness.

ARRANGEMENT OF CUT FLOWERS.

The first thing to be considered in arranging cut flowers is the vase. If it is scarlet, blue or many-colored, it must necessarily conflict with some hue in your bouquet. Choose rather pure white, green or transparent glass, which allows the delicate stems to be seen. Brown Swiss-wood, silver, bronze, or yellow straw conflict with nothing. The vase must be subordinate to what it holds. A bowl for roses. Tall-spreading vases for gladiolus, fern, white lilies, and the like. Cups for violets and tiny wood flowers. Baskets for vines and gay garden blossoms. A flower-lover will in time collect shapes and sizes to suit each group. Colors should be blended together with neutral tints, of which there are an abundance—whites, grays, purples, tender greens—and which harmonize the pink, crimsons, and brilliant red into soft unison. The water should be warm for a winter vase—cool, but not iced, for a summer one. A little salt or a bit of charcoal should be added in hot weather, to obviate vegetable decay, and the vase filled anew each morning. With these precautions your flowers, if set beside an open window at night, will keep their freshness for many hours even in July, and reward by their beautiful presence the kind hand which arranged and tended them.

SHE DID NOT DO IT.

In answer to "How Did She Do It?" I simply reply that somebody either "slept double," or was left out in the cold. The second, either refused the request of the chambermaid, and remained in No. 1 with the first, or went to No. 11 to find it occupied by the twelfth. COR.

SWORD AND PLOUGH.

There once was a Count—so I've heard it said—
Who felt that his end drew near;
And he called his sons before his bed,
To part them his goods and gear.

He called for his plough, he called for his sword,
That gallant, good and brave;
They brought him both at their father's word,
And thus he his blessings gave:

"My first-born son, my pride and might,
Do thou my sword retain;
My castle on the lordly height,
And all my broad domain.

"On thee, my well-loved younger boy,
My plough I here bestow;
A peaceful life shall thou enjoy,
In the quiet vale below."

Contented sank the sire to rest,
Now all was given away;
The sons hold true his last behest,
E'en on their dying day.

Now tell us what came of the steel of flame,
Of the castle and its knight!
And tell us what came of the vale so tame,
And the humble peasant wight?"

O ask not of me what the end may be!
Ask of the country round;
The castle is dust, the sword is rust,
The height is but desert ground.

But the vale spreads wide in the golden pride
Of the autumn sunlight now;
It teems and it ripens far and wide,
And the honor abides with the plough.

WOLFGANG MULLER.—*From the German.*

ABOUT AMERICAN GIRLS.

A striking improvement in the young-lady-hood of America is observable in parts of our country, if not everywhere. People who have been absent in Europe for some years are strongly impressed by this fact. A writer in the *Christian Union* in an article on "Society at our Watering Places," says:

And here we must stop and indulge in a little gush of admiration at these dear, pretty, charming, high-bred American girls. Their beauty is of a style so delicate; it is so much the expression of character; it has so many positive intimations of surpressed power and ability, that it is all the more interesting. We watched several of these little queens from day to day, without detecting an inharmonious movement or an unbecoming gesture—everywhere and always they appeared coolly mistresses of the situation. This piquant little air of entire self-possession, and ability to look any position in the face, is one of the peculiarities of our young-lady-hood, and when veiled by perfect modesty is a wonderful charm.

Add to this, as a companion picture, the following from the *Galaxy*, and if we admit the correctness of the sketches we need not despair of the sex, in spite of the too numerous specimens of sickly "delicacy" still seen around us:

The Nebulous Person has pleased himself with watching the out-door life of two or three young girls, in whom Nature and culture seem to have united to illustrate some of the highest possibilities of education. Free and agile as sea-nymphs, with the last "fresh tannage" of sun and spray on their cheeks, and the unconscious grace of a healthy physical life in every limb, blended with the dignity which comes of high social and intellectual training, these young naiads offered in every movement a picture of youthful bloom and vigor as delightful as rare. What a quaint sensation it gave me to see them drop Czerny's exercises or Otto's method to scramble with girlish haste and merriment for the bathing house, and then, ten minutes later, to watch them striking out from the pier with the long easy stroke of conscious power, and hanging with dripping garments and streaming locks on the rudder of the pleasure-boat moored in the chanel.

Then of a breezy evening the Nebulous Person, whose age and infirmities forbid athletics, found an unusual pleasure in modestly holding the tiller-ropes, as the tall girl opposite, half fairy, half Amazon, sent her little row-boat dancing over the darkling water with the grand, full sweep of the practical oarsman. And when, on one of these expeditions, the crew found themselves ankle-deep in water, and the fair captainess coolly leaned forward and *put in the drain plug*, with the quiet remark that *she had left it out, and the boat was gradually sinking!* the Nebulous Person's heart warmed within him, though his toes were chilled, and he mentally gave in his homage to strength and pluck in woman, at least when united with youthful grace and freshness.

Never go to bed with cold feet.

Never allow the feet to remain damp.

Adjust your clothing so as to give free and easy movement to every member of your body.

For our Young Folks.

BOYS AND THEIR MOTHERS.

Some one has written beautifully to the boys in the following manner. Here is a whole sermon in a few sentences:

"Of all the love affairs in the world, none can surpass the true love of the big boy for his mother. It is a love pure and noble, honorable in the highest degree to both. I do not mean merely a dutiful affection. I mean a love which makes a boy gallant and courteous to his mother, saying to everybody plainly that he is fairly in love with her. Next to the love of her husband, nothing so crowns a woman's life with honor as this second love, this devotion of son to her. And I never yet knew a boy 'turn out' bad, who began by falling in love with his mother. Any man may fall in love with the fresh-faced girl, and the man who is gallant with the girl may cruelly neglect the worn and weary wife. But the boy who is a lover to his mother in her middle age is a true knight who will love his wife as much in the sere-leaved autumn as he did in the daisied springtime."

GEOGRAPHICAL PUZZLE.

For breakfast take a cape of Massachusetts and let it soak all night; then shred up fine and cook in a river in Montana. This and some harbors of New Jersey will be the principal warm dishes. Some may like with these a river of Vermont, sliced very thin and well seasoned. It will be necessary to go to a mountain in Washington Territory for an indispensable article of food, and five-eighths of a little town in Wisconsin, well stewed, without scorching, will be sufficient in the way of fruit. Such a breakfast may be very cheerful if every one politely gets upon a cape of North Carolina to see that each is well helped and cared for.

BEAUTIFUL FAITH.

Birdie was only four years old, but she had already been taught that God loved her, and always took care of her. One day there was a very heavy thunder-storm, and Birdie's sisters and mamma even laid by their sewing, and drew their chairs into the middle of the room, pale and trembling with fear. But Birdie stood close by the window, watching the storm with bright eyes.

"O mamma! ain't that bu'ful!" she cries, clapping her hands with delight, as a vivid flash of lightning burst from the black clouds and the thunder pealed and rattled over their heads.

"He talks vely loud, don't he, mamma? S'pose it's so as deaf Betsy can hear, an the uver deaf folks."

"O Birdie! dear, come straight away from that window said one of her sisters, whose cheeks were blanched with fear.

"What for?" asked Birdie.

"Oh! because the lightning is so sharp and it thunders so loud."

But Birdie shook her head, and looking over her shoulder with a happy smile on her face, lisped out:

"If it funders, let it funder! 'Tis God makes it funder, and he'll take care of me. I ain't a bit afraid to hear God talk, Maizy."

Was not Birdie's faith beautiful? Mamma and sister did not soon forget the lesson.

TOBACCO—BY A SMALL BOY.

Tobacco grows something like cabbage, but I never seen none of it boiled, although I have eaten boiled cabbage and vinegar on it, and I have heard men say that cigars that was given them on election day for nothing was cabbage leaves. Tobacco stores are mostly kept by wooden Injuns, who stand at the door and try to fool little boys by offering them a bunch of cigars, which is glued into the Injun's hands, and is made of wood also. Hogs do not like tobacco; neither do I. I tried to smoke a cigar once, and it made me feel like epsom salts. Tobacco was invented by a man named Walter Raleigh. When the people first saw him smoking they thought he was a steamboat, and as they had never seen a steamboat, they were frightened. My sister Nancy is a girl. I don't know whether she likes tobacco or not. There is a young man named Leroy who comes to see her. He was standing on the steps one night with a cigar in his mouth, and he said he didn't know as she would like it, and she said, "Leroy, the perfume is agreeable." But when my big brother Tom lighted his pipe, Nancy said, "Get out of the house, you horrid creature, the smell of tobacco makes me sick."

A BOY'S BUSINESS.

It exactly suits the temperament of a real boy to be very busy about nothing. If the power, for instance, that is expended in play by a boy between the ages of 8 and 14, could be applied to some industry, we should see wonderful results. But a boy is like a galvanic battery that is not in connection with anything; he generates electricity and plays it off into the air with reckless prodigality, and I, for one, wouldn't have it otherwise. It is as much a boy's business to play off his energies into space as it is for a flower to blow, or a cat bird to sing snatches of all the other birds.

Physical Culture.

GIRLS AND SUNSHINE.

The causes of the proverbial delicacy and ill health of American women are, in our opinion few, simple, and by no means unavoidable. They lie in false early training and unhealthful habits, the results of ignorance of the laws of life, and mistaken notions of propriety, and not in any inherent weakness in the sex, or any climatic influences unfavorable to the full development and continued vital integrity of womanhood.

The foundations of ill health, in girls, are often laid in early childhood, in the enforced quiet and comparative confinement within doors, to which here—even in the country—they are subjected, under the impression that active out-door amusements are not suited to their sex. If they give way to their natural instincts, and run, jump, climb fences and roll and tumble on the ground, they are quickly rebuked, if not more severely punished, and get the names of "romp," "girl-boy," or "tom-boy," which are supposed to imply something otherwise inexpressibly disgraceful!

We are not among those who would ignore the distinction of sex, either in physical and mental education, or in the duties of active life; but in childhood this distinction is but imperfectly developed, and no sound physiological reason can be urged against a similar—we will not say identical—training for both sexes. Certainly out-door exercise is just as essential to the health of girls as of boys, and active, blood-stirring, but not necessarily rude sports, are as healthful as they are enjoyable to them. Give them strong clothes and let them run, climb and jump, at their own free will. Depend upon it, they are obeying a higher law than that of fashionable *propriety*. God bless the pretty romps! God does bless them with the rosy cheeks, lithe limbs, the full contours, the warm blood, the good appetite, and the perfect digestion of which the quiet, lady-like little dears, who play quietly in the sitting room with their dolls, know nothing.

But a lack of the muscular exercise, required for the physical development of girls as well as boys, is not the only evil engendered by too much confinement within doors. There can be no healthy development without sunlight, either in plants or animals; and both need a great deal of it. Observe a potota, or any other vegetable growing under a house, or in any situation where it gets little light and no direct sunshine. See how pale its leaves and how delicate its stem, how deficient in health and vigor! You place your petted house plants near the window, to give them all the light possible, because you know that they will not thrive in the shade, their leaves turning yellow and falling off, and their stems becoming slender and weak. Has it never occurred to you that your girls require sunshine quite as much as your geraniums? Persons confined in dungeons and mines, or in darkened rooms anywhere, grow sallow, the strength fails, aqueous humors break out, and many other disturbances of the functions of the body occur.

Strange as it may seem, it is no less true than strange, that one of the most fruitful causes of the prevailing delicacy of the female sex, from childhood to age, in this country—even in the "sunny south"—is deprivation of sunlight! The other sex gets enough of it, and the difference between the wild celery of our marshes, and the earthed up and blanched stems from the garden, which we place upon our tables, is not greater than between the men and the women of this country. This is not the only cause of the difference, but it is one of several causes, and a very potent one.

Women who avoid the sunlight, and darken their parlors and sitting rooms through fear of spoiling their complexions, invite thereby the very evil which they wish to avoid. Here, as elsewhere, however, extremes are to be avoided. The direct rays of a noonday sun should be warded off by broad-brimmed hats and sun-shades; but to shun the solar ray altogether, and shut it out from our dwellings, is equalled in folly only by the exclusion of fresh air.

Our ladies might well take a lesson from the English girls, modifying the instruction somewhat, to suit the exigencies of a different climate. An American observer thus writes of their habits in regard to exercise in the open air:

The English girl spends more than one half of her waking hours in physical amusements; that is, in amusements which tend to develop, and invigorate, and ripen the bodily powers. She rides, walks, drives, rows upon the water, runs, dances, plays, swings, jumps the rope, throws the ball, hurls the quoit, draws the bow, keeps up the shuttlecocks, and all this without having it forever impressed upon her mind that she is thereby wasting her time. She does this every day, until it becomes a habit, which she will follow up through life. Her frame, as a necessary consequence, is larger, her muscular system better developed, her nervous system in subordination to the physical; her strength more enduring, and the whole tone of her mind healthier. She may not know as much at the age of seventeen as does the American girl; as a general thing she does not, but the growth of her intellect has been stimulated by no hot-house culture, and though maturity comes later, it will last proportionately longer.

Among the items particularized in the public accounts of the bridal outfit of the Princess Royal of England, on the occasion of her marriage with the Crown Prince of Prussia. is the following:

Twelve dozen pairs of boots of useful and solid make; some of them intended for rough walking, being provided with treble soles, and small but projecting nails.

Think of that, delicate paper-shod American girl! We think the Princess set a good example in the matter of *understanding*, though double soles, without the protruding nails, would serve the purpose with our girls in the South.

Domestic Economy.

COOKING MEATS.

Cooking is, to a certain extent, a chemical process and should be conducted on scientific principles. In another view it is an art, and should be studied as such. As generally performed, however, neither art nor science seem to be thought of. "In fact," as the *Boston Journal of Chemistry* truly observes, "the processes to which food is subjected are often precisely such as a chemist might adopt, if his object were to get rid of its really valuable constituents, and retain only what is worthless for purposes of nutrition; or such as some malicious demon might devise in order to tantalize his victims with the empty semblance of nourishment, while he was destroying them by slow starvation."

In view of the general ignorance on the subject the journal just quoted gives the following hints on cooking meats, which commend to our Rural Housekeepers. As progressive farming is the order of the day, so should the spirit of improvement find its way into the household department:

The most economical way of using meat is to cook it in hot water, and serve it up in its own gravy. If it is boiled for preparing soup, the water should not be too quickly raised to the boiling point, since this tends to coagulate the albuminous portions and to prevent the juices from passing into the water. The meat should be chopped or cut as fine as possible, and steeped for some time in cold water, which should then be gradually heated up to a temperature not exceeding 150° Fahrenheit, or 62° below its boiling point. At the last moment the soup may be allowed to reach the boiling point. The *bones* should be crushed or broken up into small pieces, and boiled, or rather simmered, for eight or ten hours, in order thoroughly to extract their nutritive matter.

Soup contains the greater part of the saline matter, with the creatine, creatinine, and kindred compounds, some of the albumen and fat, and an amount of gelatine that depends upon the duration of the boiling process. Cold water extracts from one-sixth to one-fourth of the weight of the solid constituents of the meat; and this watery extract contains nearly all the savory, saline, and crystalline ingredients. After long continued boiling, meat becomes a hard mass, composed of tough muscular fibres, the areolar tissue connecting them, and parts of the nerves and blood-vessels. This is difficult to masticate, more difficult to digest, and so devoid of flavor that it is impossible to tell from what animal it came. As Liebig remarks, even a dog will reject it.

For invalids, beef soup is by far the best. That made from mutton is less digestible, and is seldom free from fat. The remarkable restorative properties of soup are due to the presence of a large quantity of highly nitrogenous principles. Very strong beef tea may almost be classed with such stimulants as brandy and tea. Creatine, creatinine, and other similar substances in meat bear a close resemblance to the theine of tea and coffee, and the theobromine of cocoa.

If we wish to cook meat in such a way as to preserve the maximum of nutriment in the most digestible form, we should place it, in large pieces, in boiling water, and keep it there for five minutes. The high temperature coagulates the albumen at the surface of the meat, stops up its pores, and thus prevents the juices

from escaping. After this boiling for five minutes, add cold water to reduce the heat to about 150° F., and keep it at that temperature until the meat is sufficiently cooked. It will then be found to be tender, juicy, savory, and nutritious. Salted meat, intended to be eaten cold, should be allowed to cool in the water in which it has been boiled.

In roasting meat, as in boiling it, the first object should be to coagulate the albumen at the surface, in order to prevent the escape of the juices. The meat should be at first placed close to the fire, kept there for ten or fifteen minutes, and then withdrawn to a greater distance from the heat. If cooked in the oven of a stove or range, the oven should be very hot when the meat is first put into it, kept at the same heat for a short time, then cooled down partially (by opening the door or checking the fire), and the roasting should then be allowed to go on very slowly, so that the inner parts may be thoroughly done. The loss of weight (mostly water and fat) is nearly one-third more in roasting than in boiling. Roast meat has the richer flavor, because certain aromatic principles are developed by this mode of cooking. The occasional "dredging" of flour over the surface of the meat helps to stop up the pores and check the escape of the fat. Roasted meat is not so well suited for invalids and dyspeptics as boiled meat, since it is apt to contain acrid substances.

RECIPES.

Winter Dessert.—One quart of milk, six eggs, reserving the whites of two, which beat to a stiff froth, and when the milk boils, drop in spoonfulls; in a minute or two remove carefully to a plate; after beating the eggs light, pour the boiling milk slowly into the egg, stirring the egg quickly the while; sweeten it and place over the fire, stirring it all the time until it simmers—it must not boil. If it should curdle pour it immediately into another pan and stir until cool. Place sponge cake, moistened with Maderia wine (and on which preserved strawberries or other fruit has been spread,) in the bottom or sides of a glass, or China bowl, and when the custard is cool, flavor with vanilla, and pour into the bowl, placing the white balls carefully on top; then surround the bowl with ice, or stand it in cold water until required.

A correspondent of the *Germantown Telegraph* recommends this.

Apple and Tapioca Pudding.—We give this recipe on the authority of Mrs Beecher, (in the *Christian Union*) with the endorsement of "Mrs. Rural":

Put a tea cup of tapioca into a pint and a half of cold water over night. Before breakfast the next morning set it where it will become quite warm, but not hot enough to cook. After breakfast pare six good sized sour apples, or eight if not very large; quarter them and *steam* them in a dish till tender. Lay them into the pudding dish, stir a cup and a half of sugar into the tapioca, add a teacup of water and a teaspoon even full of salt, stir together and pour over the apples, slice a lemon very thin and lay over the top, bake slowly three hours; eat with butter, with wine sauce, or hard sauce, as you prefer.

Orange Pudding.—Peel and cut five good, sweet, juicy oranges into thin slices, taking out all the seeds. Pour over them a coffee-cup of white-sugar. Let a pint of milk get boiling hot by setting it into some boiling water; add the yolks of three eggs, well beaten, one tablespoonful of corn starch, made smooth with a little cold milk. Stir all the time, and as soon as thickened pour it over the fruit. Beat the whites to a stiff froth, adding a tablespoonful of sugar, and spread over the top for frosting. Set it into the oven for a few minutes to harden. Eat cold or hot for dinner or tea. Substitute berries of any kind or peaches, if you like them better than oranges.

Silvering Ivory.—Immerse a small slip of ivory in a weak solution of nitrate of silver and let it remain till the solution has given it a deep yellow color; then take it out and immerse it in a tumbler of clear water, and expose it in the water to the rays of the sun. In about three hours the ivory acquires a black color; but the black surface on being rubbed soon becomes changed to a brilliant silver.

Velvet Cakes.—Two eggs, one quart good milk, a piece of butter or lard size of a hen egg, and flour enough to make a batter as stiff as pound cake. About two or three tablespoonsful of good yeast. If wanted for tea, set about twelve o'clock, bake in muffin rings, cut open and butter before sending to the table. This combination makes a very delicate tea cake.

How to Cook Beets.—Beets should be carefully washed, but not cut before boiling, as cutting them allows the juice to escape, leaving them white and hard. In summer boil them an hour in salted water, and in winter boil them four hours. After boiling, scrape off their skins, and cut off the threads hanging from them.

Transparent Cement.—Dissolve seventy-five parts of Indian rubber in sixty parts of chloroform or benzine, and add to the solution fifteen parts of mastic.

A Remedy for Vermin.—An experienced physician says that an ointment made of sassafras chips and lard is death to all vermin, and was much used in hospitals during the war.

Notes and Memoranda.

LITERARY NOTES.

Dr. Holland's new novel, "Arthur Bonnicastle," commenced in the November number of *Scribner's Monthly*, and continued with increasing interest in the December number, promises to be one of the most attractive stories of the day. In style and finish it is certainly unsurpassed, and contrasts most favorably with the inelegant, slangy slip-shod mode of writing so often met with in the serial stories of even our leading magazines.

The December *Atlantic* has a notable instalment of Parton's Jefferson, on the relations between him and Hamilton. It is likely to excite some animated discussion. So is the leading article on "The Fight of a Man with a Railroad," by John A. Coleman, who subscribes himself as of Providence, R. I., apparently for the sake of intimating that he can be found, if wanted, to substantiate any of his uncomplimentary statements.

The *Rural Sun*, edited by J. B. Killebrew, assisted by Dr. J. M. Safford, Professor Hunter Nicholson, and Mrs. L. Virginia French, adds another to the list of Southern agricultural and family papers. It makes a good beginning, and we wish it all the success it deserves, which is more than some of us are getting, ourselves being judges. [Nashville, Tenn., Rural Sun Publishing Co.; $2 50 a year.]

The *Herald of Health*, for November, has, among other noteworthy articles, some practical "Hints to People Going South," which we trust will be heeded by those for whom they are intended. The *Herald of Health* is an excellent hygienic publication, and should have a large circulation here, where its teachings are needed quite as much as elsewhere. [Wood & Holbrook, 15 Laight street, New York; $1 25 a year.]

Carl Pretzel's "Almineck and Vedder Brognostikador, for 1873," is a Hans Brietmannish publication of the funniest kind, full of genial humor and verbal drolleries. If laughter be better than medicine, this "Pook" should have a prominent place among the hygienic as well as the astronomical publications of the day. [R. M. DeWitt, 33 Rose street, New York.]

The fourth and fifth parts of DeFontaine's "Cyclopedia of the Best Thoughts of Charles Dickens," have come promptly to hand. One more will complete the series, which will make a handsome volume, and one worthy of a place in every library. [E. J. Hale & Son, New York; $1 50 for the six numbers.]

The *Illustrated Record and Depository*, published by R. A. Harrison & Co., of New York, at $1 25 a year, is not one of the flashy and trashy papers, of which we have too many in this country, but seems to be, so far as we have observed, well filled, carefully edited, and morally pure.

An entirely new edition of "Major Jones' Courtship," with revisions, and thirteen additional papers, has just been issued from the press of D. Appleton & Co. The work, for nearly thirty years, has been among the most popular of American books of humor.

"The Hand-Book of Southern Travel," (D. Appleton & Co., New York,) has been entirely re-written for the present season. It affords a vast fund of information for those intending to spend the winter in the South.

Julian Hawthorne's novel is now completed, and will shortly appear. Its title is "Bressant," the scene being laid in New England.

C. L. Allen & Co., 76 Fulton street, Brooklyn, N. Y., a note on whose "Flower Farm" we published in a late number, have been kind enough to send us some specimens of their bulbs, and very fine ones they are. We have no doubt that any of our readers who may be in want of anything in their line, will be served with the very best that the market affords, as they raise the bulbs and seeds themselves, (except such as are necessarily imported,) and know just what they are. Send for a Catalogue.

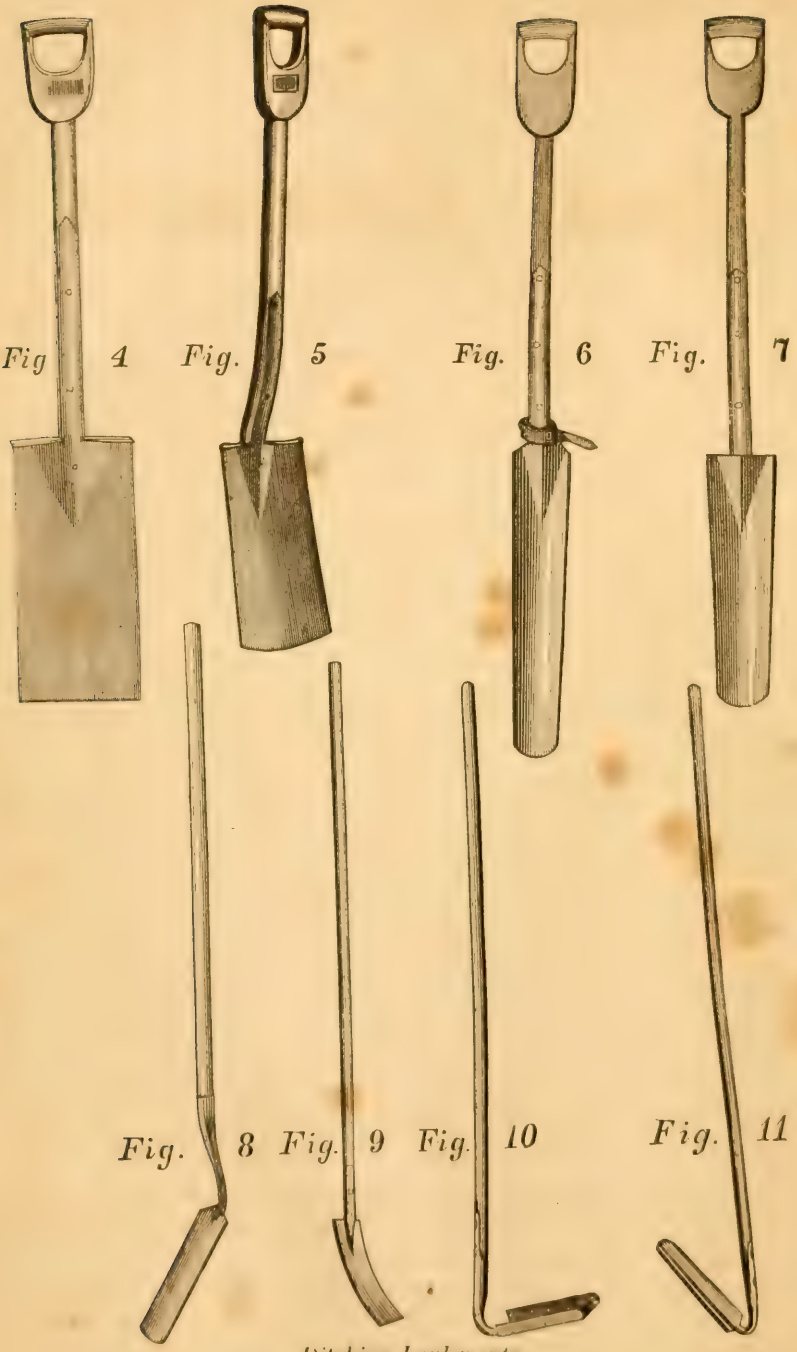


Fig 4 *Fig.* 5 *Fig.* 6 *Fig.* 7

Fig. 8 *Fig.* 9 *Fig.* 10 *Fig.* 11

Ditching Implements.

THE

Rural Carolinian.

Progress with Prudence, Practice with Science.

D. H. JACQUES, Editor.

Vol. IV.] CHARLESTON, S. C., JANUARY, 1873. [No. IV.

Thoughts and Suggestions for the Month.

We suppose most of our readers have, in a general way, at least, sketched out their plans for the year and made their arrangements, so far as possible, to carry them out. This is right; but it will be well now to review these plans closely and critically, while there is time to change or modify them. Are they safe and practicable? Can you do it? Can you accomplish all that you have laid out for yourself to do? Make close calculations and do not try to do too much, lest you accomplish nothing rightly. A bad beginning may make a good ending, as the adage has it, sometimes; but a good beginning is much better—in fact, in farming, at least, things generally go wrong through the whole year, if our operations are not promptly and judiciously commenced at the beginning of the season. It is easy to get off the track but hard to get on again. Above all, as we have repeatedly urged, make your arrangements for good provision crops of all kinds. After this do what you can in cotton. All the teachings of the last few years point to *diversified industry* as the policy and hope of the South. It is well that we grow cotton. We can grow it with profit, if we manage in a sensible way; and the world wants and must have it; but if we grow nothing else, we shall, as we have done in the past, enrich others while impoverishing ourselves. Aim to make the plantation or the farm self-sustaining. There are crops which it would not pay to raise for market, which it does pay to raise for home supply. Cotton is a good thing, but not to eat!

———We have urged, and continue to urge, experiments in planting—in the different modes of preparing the soil, depth of ploughing and sub-soiling, modes of putting in the crops; in fertilizers, and the best mode of applying them, and so on; but to be of any value, these experiments must take account of many circumstances, such as the nature of the soil and its previous treatment and condition; the character of the season, whether dry or wet, and the amount and quality of cultivation given the crop. For the want of this careful discrimination, experiments in agriculture are deceptive, and often mislead instead of guiding aright the novice and the inquirer.

———Breaking up the land for corn is now one of the principal operations. Our readers know that we advocate deep ploughing as correct in principle and as a rule in practice; but we have also tried to impress upon them the equally important facts that deep ploughing does not necessarily imply a deep turning over of the soil; that the depth of the soil and the character of the sub-soil should modify our treatment of it; and that where a deepening of the soil is to be undertaken it should be gradual, so that the ameliorating influences of the elements shall have time to give fertility to the portions of sub-soil turned up. A sub-soil plough, or bull-tongue, should follow the turning plough, where sub-soiling is thought desirable. Avoid ploughing when the land is too wet, especially if the soil be clayey.

———To what extent it will pay to haul muck, leaves and other fertilizing materials for making composts depends upon circumstances. That these materials have value, is clear enough; but if they cost us, in labor, more than they are worth, it will be better, of course, to leave them where they are and buy such fertilizers as will cost us less in proportion to their value; but often these materials are close at hand and can be gathered and hauled at times when the teams would otherwise be idle, or the carts returning from distant fields may come home loaded as well as empty, adding, in the course of the year, a large mass of humus-making material to the stable and lot manures, and costing very little.

———The manure problem is by no means an easy and simple one. The best stable dung, lying under cover in your own lot, may cost you more than it is worth when applied to a distant field, but where the distance for hauling it is short, it will pay heavily for the labor necessary to put it upon the land. All bulky manures should, therefore, be applied as near as possible to where they are produced, and the guano and phosphates reserved for more distant fields; and good policy dictates, we may add, that our operations be concentrated as much as possible. It is often better to reclaim and fertilize a comparatively poor old field near the homestead than to cultivate newer and better land at a great distance.

———Where coarse manures are to be applied broadcast, it is important that they be turned under at once, so that they will have time to decompose before they will be needed for plant-food. Applied at planting time, these manures are sometimes a source of evil instead of good, causing the crop to "fire," and decreasing instead of increasing the yield. The fresher the manure when turned under the better, provided it be done in time for the process of decomposition to be completed before the growth of the plants to be nourished has commenced, for, in such case, the land gets the benefit of the chemical action in the process of fermentation, as well as all the fertilizing elements in the manure itself.

———Labor-saving implements are what our farmers greatly need in these days of demoralized labor, but we advise caution in purchasing new and untried ones, as many of them, useful perhaps at the North or the West, are utterly unsuited to our wants; but, by all means, get such of the well tested ones as you can afford to buy. The Granges and Farmers' Clubs should take this matter in hand in earnest.

———Stock must continue to receive the best attention, if you wish effective work from your horses, mules and oxen, and profitable returns from the rest.

A Practical Essay on Plantation Economy.*

That a premium should be offered for the "best practical paper on Plantation Economy as Adapted to South Carolina," is evidence that the system of plantation management generally adopted by our planters is imperfect. Indeed it may be questioned whether they do or ever have generally practised any well devised scheme of plantation economy. That the planters of South Carolina do subsist and accumulate is little else than a proof of the material advantages of our climate and country. Unless devotion to cotton culture be accepted as an evidence of approved plantation economy, our farmers are not entitled to the credit of high farming. In a country where a genial climate and a generous soil compensate for half the labor required in colder climates, no system can be approved that does not produce a surplus for market, as well as subsist the producers. That this can be done by the farmers of South Carolina is as clear as it is that it is not done; and it is equally evident that we are capable of annually exporting an average cotton crop without the necessity of importing a single article of such necessities as can be grown in the Temperate Zone. To suggest a method by which this end can be effected will be the object of this paper.

In the first place, all the leaks on the plantation, however small, must be stopped, for often a penny saved is two pence made. A pound of bacon bought at ten cents seems cheap enough; but when the teams with hired drivers are to be taken from the farm to haul it from the place of purchase, or from the railroad; and then, too, the money which is to pay for it being, in all probability, *in futuro* and drawing one and a half per cent. per month, considerable trouble and labor had better be incurred to grow that meat at home, rather than buy because so cheap. No farmer in South Carolina need buy a single pound of meat. One single well-bred hog, twelve months old, butchered annually for each member of his family, will supply him with an abundance of meat. And this can be done by simply economizing the waste about our farm lots. The fallen fruits, the stubble fields, the kitchen slops, and the gleanings about his stables, will suffice to produce a sufficient quantity of meat for the farmer's family.

In the second place, bread should never be bought with the cotton crop. If wheat cannot be grown it should be bought with corn; or if corn be an unprofitable crop, which it is on nine-tenths of the plantations of South Carolina, some other grain less expensive, but equally valuable in market, should be grown to be sold or given in exchange for wheat or flour. If our farmers could be induced to determine to produce their own meat and bread, two great points would be gained towards adopting

*Extract from the Report of the Committee of the State Agricultural and Mechanical Society on the Fine Arts and Literature: "A practical paper on Plantation Economy as Adapted to South Carolina." The Committee have no hesitation in awarding to Colonel D. Wyatt Aiken the premium offered for the essay on this subject. This paper is eminently practical, and ought to be in the hands of every farmer in South Carolina. The Committee recommend the publication of this paper for distribution.

WM. K. BACHMAN, *Chairman.*

Columbia, November 7, 1872.

that system of plantation economy which would restore our State to her wonted prosperity. But so long as our smoke-houses are in Baltimore, and our grain crops in the Northwest, we will continue to be "hewers of wood and drawers of water" for other less favored, but more prudent people.

The cultivatable land of South Carolina is capable of sustaining four times its present population. Hence there must be a vast quantity of it waste or unprofitably utilized, simply growing up in pine thickets and producing nothing to defray the annual taxes imposed upon them. Few acres in the State so sterile, that they will not cover their own nakedness with vegetable matter during the summer. This growth can be and should be turned to account, by being consumed by sheep upon the spot where it grows. One million Merino sheep might be imported into South Carolina on the first of next May, and subsisted till the first of the following November, without further cost than penning them every night, as security against dogs. Almost every native grass or weed that grows in the State is fattening food for sheep, and being closely nipped by these ramblers is carried nightly to the hurdling pens, and before morning there distributed, with wonderful accuracy, as a concentrated fertilizer over the land. Every hundred sheep thus managed during a year will so thoroughly enrich the most barren two-acre lot, that it will grow the following season barley or turnips enough to carry the same hundred sheep through the succeeding winter; and if this same lot be then seeded in grass it will yield two tons of hay to the acre, or if planted in cotton will produce more than a bale to the acre, with average seasons and proper culture.

Sheep will not only gather from our waste lands all kinds of noxious weeds and grasses, and convert them into stimulating manures, thus restoring the most barren spots to fertility almost without cost, but every ewe will with the greatest certainty produce a lamb, and the wool-clips from any flock of grade Merinos will more than compensate for the trouble and expense annually incurred. As an article of diet no flesh is more delicious than mutton, and as an evidence that the prejudice existing against the peculiar taste of mutton is rapidly yielding to popular favor, it will command at all times a higher price than beef or pork. That more sheep are not grown in South Carolina is amazing, and can only be accounted for from the infatuation of our farmers upon the cotton crop. Any system of plantation economy adopted in this State and ignoring the sheep flock is incomplete and expensive.

Growing wool and bacon at home, and substituting the small grain crop for corn, except where corn can be most profitably grown, is by no means an abandonment of the culture of cotton. This system will curtail the area, but tends to increase the yield, and thereby encourages the farmer to aim at making his cotton crop what it should be, a net income. Over four thousand pounds of seed cotton have been grown upon a single acre in South Carolina, and frequently ten bales, of four hundred pounds of lint cotton each, have been picked and ginned from ten acres. Such crops, however, never have and never will be gathered by the farmer who anticipates his harvest in proportion to the area planted. An average cultivated crop in South Carolina is about twenty-five acres to the mule; ten acres in corn, and fifteen in cotton; and is a most wasteful economy, which scarcely produces corn enough to feed the laborers and plough animals, and not a sufficiency of cotton to guarantee an appreciable net income to the farming community.

If more grasses and small grain were sown, and less corn cultivated, the number of plough animals, which are expensive feeders, might be greatly reduced. For instance, the mule that can cultivate twenty-five acres of corn and cotton, can cultivate the same proportion of cotton and twice as many acres of small grain as of corn. Or if three mules be required to cultivate forty-five acres of cotton and thirty acres of corn, by a substitution of small grain for corn, two mules can cultivate the forty-five acres of cotton, and the thirty acres of small grain, thus on a three mule farm of the present system, by this substitution saving the expense of keeping annually one mule.

Almost anywhere in South Carolina barley will produce, upon sheep hurdled lots, from twenty-five to fifty bushels per acre; rye will produce on any upland as many bushels as corn; wheat should be grown only to prevent buying flour, and red oats will produce two bushels with more certainty and less expense than corn will one; and if one bushel of corn will feed a working mule four days, two bushels of red oats will feed him five days, keep him in better health, make him more sprightly, and tend to prolong his life, whereas corn as a constant food has an opposite tendency. These red oats have never yet taken the rust in South Carolina, and have never failed to remunerate the farmer, if sown early enough in the fall. If sown in August they will supply winter pasturage for sheep without detriment to the crop, and greatly to the benefit of the flock. To economize labor they should be sown on cotton land previously to ploughing the cotton the last time. The cotton crop requires the work, and the oats are thus sown with no other cost than that of sowing. The cotton stalks can be knocked down in March, and the oat crop harvested in May.

Every policy that aims at reducing labor on the farm should be adopted, for no question has so worried and troubled the Southern planter during the past few years as that of labor. When labor was capital, never were the two antagonistic elements known to harmonize more beautifully; but at present they are the antipodes of each other in the South; and, contrary to all anticipations of practical economy, where they conflict, labor usually becomes ascendant. No amount of capital can control that peculiar system of labor now existing at the South. Fair wages will command a sort of made-shift performance. Enhanced pay, or wages increased even tenfold, will not perceptibly improve the quality of the work. Fifty cents an acre may "hoe" an acre of cotton, seventy-five cents will not perform the work any better. Ten dollars per month will command so much labor; twenty dollars per month will not improve the quality, nor increase the quantity of the same work. Such a general condition will continue during this generation. Each individual farmer may effect a different and better result upon his own farm, but, to make the change general, some system must be adopted that will produce the same result with less dependence upon this inefficient labor. If a substitution of the small grain crop for the corn crop, upon most of our plantations, dispenses with one-third the plough animals on the plantation, the same system will discharge the same proportion of labor. Six laborers are required to cultivate seventy-five acres of land, if thirty be in corn and forty-five in cotton. Four laborers will cultivate the same area, if thirty be in small grain and forty-five in cotton, thus saving

to the employer the hire and rations of one-third the laborers, as well as one-third the plough stock.

This system, too, enables the farmer to rest his lands, or (by succeeding his small grain with a green crop to turn under in the fall, such as the pea crop sown broadcast, at the rate of two bushels to the acre,) so rotate his summer crop as to improve his lands perceptibly in a few years. Large yields of cotton may put money in the pocket, but it annually impoverishes the farmer. Strange paradox! but, nevertheless, true. Any crop that frequently turns the surface of our soil to the bleaching agency of the sun during our hot summer months, must by evaporation extract from the soil more fertility than is restored to it by a sprinkling of a few pounds of caustic fertilizers. And our washing rains always fall during the summer, washing away the little soluble matter, or plant-food the soil contains. Hence the devotee to cotton may for a few years receive handsome returns for his labors, but he seldom leaves to his offspring an inheritance of an improved plantation.

Beef cattle cannot be profitably grown in the greater portion of South Carolina, as a marketable commodity. If every farmer butchered a sufficiency for his family, and supplied himself with milk and butter, it should suffice. Beyond this, cattle, in a majority of cases, are unprofitable stock. Their heavy tramp is injurious to our light lands, and being the poorest of scavengers, they require too much feeding between November and May to be profitable. Of course certain portions of the State are exceptions to this general remark. In the Peedee section and coast counties of South Carolina, there are large areas of uncultivated lands that could be in no other manner more profitably utilized than by stocking them with herds of such cattle as are best suited to our climate and usage. The Brahmin and Ayreshires, with their crosses, would be invaluable to the owners of such lands.

Strange as it may seem the chief objection to stock raising in this Southern climate is the winter feeding. Sheep will winter themselves upon our cotton fields and the early sown grain, but cattle must be housed and fed. Fortunately, however, any acre of upland, thoroughly prepared by deep ploughing and manuring and pulverizing, will, if left to its indigenous growth, produce grass enough to make sufficient hay to sustain a cow or ox during the following winter. And the turnip crop, properly sown and cultivated, will feed luxuriously two cows to every acre, or twenty-five sheep to the same area. They should be sown in the drill, on highly manured and well prepared land, in July or August, cultivated once with both hoe and plough, and fed away as drawn from the drill. Any of the white varieties will keep sound until half the winter is gone, and the yellow Aberdeen or Ruta-Baga will, if cultivated properly, survive our winters with perfect soundness. One thousand bushels, either by weight or measurement, can easily be grown to the acre. About three hundred bushels is an average crop in South Carolina. An Ayreshire cow will keep in good milking condition all the winter on two bushels of raw turnips daily.

But nothing conduces so successfully to stock raising as comfortable housing in wet or cold weather. Alas! for the poor brutes, how many of our farmers are prepared to house their cattle, sheep, or hogs, even a single wet, freezing night in midwinter? The inevitable cowpens, half leg deep in mud and manure, are of Southern

origin, and seem to be peculiarly advocated in South Carolina. An animal that is carefully protected from the weather during winter nights, and housed during the day, if wet or exceedingly cold, will materially reduce the expense of keeping by producing a large quantity of manure, and by entering upon the spring in such a condition as to at least gratify its benevolent owner.

To complete the best practical system of plantation economy adapted to our State, each farmer should realize the necessity of beautifying his home. He should not live for the moment, but every child should be reared to believe there is a peculiar attraction about the old homestead. The fragrance of the rose, the shade of the majestic oak, the carpet of green that surrounds the venerable mansion, the ornamental out-buildings, and the general air of comfort and contentment, should be all indelibly impressed upon the plastic minds of our children. These features would be readily attractive to strangers, and would contribute towards enhancing the market value of our lands, now so ridiculously low, and induce our farmers to conclude this shall be their abiding place as surely as it has been the place of their nativity or adoption.

D. WYATT AIKEN.

Practical Hints to Young Farmers.

[*Concluded from the December Number.*]

But the question comes up, how may we improve our condition and reap the full benefits of rural life? Here allow me to say that all advances must he made by the improvement of natural resources. We must know what these resources are and how to lay hold of them and push them to their final issues.

To illustrate this we will suppose the case of a young man who has just come in possession of a good wife, a plantation of medium size and quality, a sufficient supply of stock for farming purposes and an amount of capital otherwise for a beginning.

His plantation, of course, according to our patterns has a portion of exhausted land in the shape of old fields; a small supply of original forest and a portion under cultivation capable of producing average crops of grain and cotton. It has also a number of buildings suitable for a home and agricultural purposes.

The question is, how he may so manage this farm as to add most to his capital in thirty years, enjoy home comforts, and leave the plantation in the best condition for his successor?

Shall he begin by cutting down his supply of original forest with whatever of old field pines may have arisen on land capable of producing a moderate crop?

Shall he make large investments in commercial fertilizers and plant more cotton than he can reasonably hope to cultivate well? Shall he ignore grain crops and pasture lands and allow his stock to run at large and make raids upon the pasture lands and grain fields of his neighbors, or drag out a miserable existence in the puny pasturage that springs up in the lanes and fence corners? Such a course might result in an income of cash temporarily.

But soon a ruined plantation and the sourest set of neighbors imaginable will suggest the propriety of his selling out and trying what he can do in Texas.

Some of his neighbors may be able and willing to pay something to get rid of a nuisance. Hence his plantation is sold and he is on the wing to try the genial soil and climate of "the far west." Men whose organ of destructiveness is largely developed, find a proper field in the dense forests and cane-breaks of that region.

Now the better course we would suggest for himself and the country, is in the first place that he lay off and inclose a good and sufficient portion of his plantation for pasture lands and that his own stock be confined on his own premises. He may be under temptation to let them run at large to get a share of the pasture on the waste lands of a neighbor, but he had better provide for his own.

This pasture land claims attention and some labor. Its value may be greatly enhanced by sowing suitable crops for the pasturage in winter, by planting shrubbery, trees and vines for browzing or to raise a forest.

The small grains should receive a large share of attention both for what they yield in the way of a supply of food for the crop of vegetation that rises after harvest and which if ploughed in in the fall contributes largely to keep up fertility.

Corn, the most valuable of grains, should receive due attention both in the use of appropriate fertilizers and prompt cultivation.

Cotton, as the great and reliable money crop of the country, should receive all due attention. Fertilizers should be abundantly applied at the right time and manner.

I am of the opinion that it is good policy on the whole to plant about half the usual quantity of land in this crop, with a view to the production of a given quantity of the lint. Say for instance the farmer expects 8,000 pounds of lint. Ordinarily, 40 acres are necessary to yield this amount.

The field must be gone over at least five times with the plough and twice with the hoe. This is equivalent to going over 200 acres with the plough and 80 acres with the hoe.

Now, suppose half of this labor is devoted to the preparation and application of fertilizers for 20 acres. This labor in time aggregates about ninety days for a man and fifty days for a horse or mule.

All the fertilizers necessary for the 40 acres, and the ninety days labor of the man, and the fifty days labor of the mule, devoted to the 20 acres, will, as I think, secure the 8,000 pounds of lint.

To say nothing about being able to give the more prompt attention in the matter of cultivation, every practical farmer knows the importance of doing work in the right time, in the whole process of raising a crop, and the damage that may ensue in this line from an unfavorable season. It may be too wet or too dry to give the right cultivation in the nick of time. I believe the yield of a field of cotton is often reduced one half by a failure of ten days to work out at the crisis of the season. And the work is doubled by the unfortunate delay in time.

It has been demonstrated that an acre of land in our climate is capable of yielding 1,200 pounds of lint, so that I think 400 pounds as an average on 20 acres, with high cultivation, a safe estimate.

It is also important to the young man, and to posterity, that he adopt and carry out a system in his modes of cultivation and his processes of fertilizing.

There should be system in the rotation of crops. No field should be put in crops requiring summer cultivation with the plough, more than two years in succession. It is true some fields have held up longer than this, and many will hold up. But the policy of riding a free horse to death was never good, even though he were borrowed.

The most successful farmers in the world are those who have been most systematic in this respect. With them the object is not only to reap an abundant harvest the present season, but to increase the probability of larger results in each of the years following.

With a view to this end, fertilizers are chosen or manufactured, the crop for each field selected, the kind and order of ploughing directed, and the years in which the lands shall lie unploughed. So it may be here, and should be.

There should be system in the choice and application of fertilizers. Some of these are quick in their results. Others slower in their operation, but much more durable in their effects. Every plantation affords a great amount of material, which may be converted into valuable fertilizers. Observation and experience must be relied on to guide in such matters.

In Europe lime is the sheet anchor among fertilizers, and would doubtless aid greatly in the production of most crops here. Our soil is hungry for alkalies. Their application would cure many ailments, and in particular would render the turning under of green crops and other vegetable matter more effective.

By the way, the burying of a crop of vegetation in the soil on which it grew is one of the cheap methods of improving land.

The present season has been very favorable for the growth of vegetation on stubble-fields; this turned under before Christmas, after being sprinkled with lime might help the young man's crop next year and years following.

If called on to suggest a system of rotations in crops and in fertilizers, I would state the following: For cotton take a field which did not feel the plough last summer. Whatever of home made manures you intend for cotton, spread over this field and plough in before the 1st of February. Let the land be well pulverized. If clay predominates, the field will bear a heavy coat of litter from the woods, especially if closely pastured by stock last summer. The best stable manure will do no harm; put in at this time, even if fifteen minutes do not intervene between the time of digging up in the stable and the covering over in the field. The decomposition of manure or any vegetable matter in the soil is desirable, inasmuch as the gases given out in the process are absorbed and retained by the hungry soil, and afford nutriment for the first plants that rise on it.

If guano is to be used it should not be applied till you are about ready to put in your seed, as its volatile nature causes its stimulating properties to rush rapidly through the whole bed, rise to the surface and travel off to adjacent fields or forests.

Corn may properly follow cotton, provided there be a generous sprinkling of fertilizers; peas may be planted among the corn, after it has attained sufficient size as not to be injured by the vines.

Corn may be followed by wheat or oats, or rye. No injury is likely to result to the crop if you give the whole field a sprinkling of lime, or stable manure, or litter from the woods or fence-corners. Nor will the ploughing in of any amount of pea vines and crab-grass be likely to injure the coming crop or the future fertility of the land.

If the youth has an inkling to try what virtue there is in clover or grass, or the two combined, after putting in his grain with the plough, sow your seed of the grasses, and run over the land with a light brush or harrow; very little pasturage of the field is admissible after harvesting the grain crop. The clover and grass then admit of no intrusion. Soon after the clover begins to rise the next spring sow on it from a peck to two bushels of Plaster of Paris. The first cutting may take place about the middle of May. As soon as the clover begins to rise after the cutting repeat the dose of Plaster. The second cutting may take place in July. Again apply the Plaster, and you may reap a third, and perhaps a fourth harvest. Put on the Plaster at the same time next spring, etc.; you may make two cuttings this season; what rises after this should be turned under in the fall as a fertilizer.

Clover hay mixed with grass is not surpassed by any forage for stock; and, one beauty of it, is that you get a valuable crop without ploughing. While the roots of the clover penetrated the earth to such depth as to operate favorably upon grain crops for years following aside from that portion of the plant buried by the plough.

Now, if the young man is greatly influenced by the opinion of the Englishman, that the hoofs of stock are beneficial to the soil once in seven years, instead of turning under the clover in the fall of the fifth year he may let the field remain for pasturage on the sixth year on whatever the field produces of its own accord.

As, however, it is rather difficult for clover to take root in the brain of a young man grown up under the customs of this latitude, he may prefer to plant a crop of peas after taking off his crop of small grain in the summer of the third year. If this is his choice, let him get the vines to flourish as greatly as possible, so as either to answer for fattening his stock for slaughter, or turning under preparatory for a crop the next season. But my opinion is that land should feel the plough but two summers in five. Let it have some time to recuperate in the natural way. Land in our climate is greatly wasted by the floating off of vegetable matter incorporated with the soil, which each successive ploughing brings nearer on the surface. If the flat places, on which water settles after flowing from higher grounds, be examined, a sediment of vegetable matter will be found which is really the cream of the land in the matter of fertility. But only a small portion of this stops on the plantation where it originated, but floats onward till arrested by some obstruction, or is carried in a state of solution till the water becomes calm, when it may be dropped. Hence our fertilizers may contribute to the fatness of the soil in the swamps and canebrakes of the Santee, or even to build up new islands along the shores of the Atlantic. Nothing is loss to our earth.

It is a bare possibility that Ireland is an aggregation of the lost particles of this continent swept off by the action of the gulf-stream. No wonder, then, that the sons of St. Patrick delight to come over to the fountain head of their green home.

But the young man should pursue a system in the management of his stock;

good kinds of animals should be selected for a beginning, and care taken to keep them up to the standard by all those expedients suggested by observation and the experience of older heads.

How far the state of supply and demand for wool would justify a large investment in sheep would be a matter for serious consideration. Wool has been in demand from the most remote period of antiquity; it is now called for in quantities before unknown; it is probable that the demand will increase. It is a sound maxim of political economy that the producers and dealers in articles of prime necessity are the men most likely to prosper in business. Hence the producers of wool may expect a constant and safe market. It may further be regarded as established that a large portion of the supply of this commodity must be by this country.

Europe cannot easily run up her productive agency in this respect. She has so many mouths to be fed in proportion to her territory that much of her energy must be devoted to the supply of her flesh markets. The same is beginning to be true of our middle States, so that the South may begin to look out to take her place in the supply of the wool market. There is a remarkable link connecting the cotton and wool business in this region which claims attention.

Much of our land is better adapted to the pasturage of sheep than any other purpose. These animals can easily be rendered subservient to the increased production of other staples of farm labor. They may be so managed as to interfere but little with other branches of production.

Other animals may suit his farm. Great gains may arise from horses and mules. The same is true of cattle and swine. People will eat flesh as long as they can get it, so that the demand will continue as long as men are able to buy, and with some a little longer.

The young man should be systematic in the culture of trees and shrubbery. He should give attention to how he consumes the trees suitable for building and inclosures.

Certain trees in a forest should be cut to supply present wants, and others kept for future supplies. If he does not understand the reason for this and the method of selection, he had better consult some of the fathers. The trees of the original forests is property of great value, and should be used with care and proper foresight.

But the growing of trees on land once exhausted claims very serious attention. They help to protect the soil and restore fertility. They come forward rapidly to supply demands for fuel and many other useful purposes. Take that common pest of the corn field, the sassafras, no way of getting rid of it, but let it alone till you have need of posts, and it is the thing for you. It affords capital browzing for stock. The same is true of the peach and plum. Let old Mooly alone when she can get hold of the spreading branches of a peach tree. To her it is a choice food and a capital medicine.

Then the young man should not only have a care for an orchard, with a choice variety of fruit trees, but let him plant trees for shade and stock. He would do well to plant the seed of trees on his waste lands. Such as the plum, China, oak,

hickory, walnut and mulberry. Ours may yet be a silk-producing country. From trials made in this business, I have no doubt it might rival France in a short time. Other industries may prolong the time, but the door is wide open to enter upon this business. Climate and soil exactly adapted to trees and worms.

The time is coming, and may be close at hand, when the demand for all kinds of timber suitable for furniture will be active. Then every log of maple, walnut, gum, cherry, birch and China tree will be the measure of dollars as cotton bales now are, to say nothing of a possible demand for other trees now abundant and often doomed to wanton destruction.

The newspapers tell us that a walnut stump sells in New York for $150. Take care of your scrawny walnut trees, they are the thing for beautiful and durable furniture.

While trees are under consideration, the vine may properly claim its place. Vines grow luxuriantly in our soil. Many varieties bear plentifully, and their fruit is delicious. Good for all the purposes to which grapes are applied, and yet mostly propagated by the hand of nature. I am not aware what value is commonly attached to vines as an appendage to a plantation, but your pigs soon find where the muskadines fall, and soon show their value as a food for swine. If birds are of value on a farm, the wild grapes help to keep them on their watch towers.

The rapid growth of vines gives them value on pasture grounds as a food for cattle. If the young man feels an interest in posterity, let him get the vines spread over his water lands. Let him study nature in regard to the dissemination of useful trees and shrubbery in the same localities. His grand-children may yet lay up their linens in drawers manufactured of trees of his planting.

But there is another important matter to which the young man should attend at the outset of his operations. That is, the cultivation of himself. Man is intellectual and immortal. His highest and noblest attributes are his moral powers. His understanding should be enlightened, his rationality cultivated, the whole powers of the soul rightly directed.

That learned pagan, Virgil, in his treaties on Agriculture, enjoins the husbandman to pray to the gods for propitious seasons, to bring the oblations, and keep up the festivals of the local deities. He recommends no scientific pursuits aside from the study of the seasons, the nature of the soil, the crops, animals, and how to prognosticate the weather. All worthy objects in their place, and which naturally claim attention.

Times have changed since the days of Virgil. Men have changed. But the laws of animal and vegetable life remain as they were.

For self-cultivation, we recommend to the young man all that is implied in a life of piety according to the Sacred Scriptures. Every practice enjoined by the Word of God is good for his soul. Every restraint imposed is helpful to his higher nature. Let him bring into his house ample means for proper information. Let his leisure hours be devoted to reading that which is substantial, and to reflection upon those various subjects brought to his knowledge by books and observation. Let him not indulge the error too common among laborers, that he has no time to

read. That when night comes he is tired and must sleep, he cannot read. The profession and practice of such is generally inconsistent. When exciting amusements are at hand, fatigue is forgotten; sleep is deferred till the smaller hours come in. It is time the old charge of hoosierism against tha rural population was wiped out, if it was ever true; and that the agriculturist should take his true position in society. It is true that some of the most intelligent men I have met had been accustomed to follow the plough, and attend to all that routine of toil and attention which pertains to farm-life. But they had books and read them. Books of Theology, books of History and Biography, books of Science and General Literature.

I have known some young farmers whose early advantages for the acquisition of knowledge had been inconsiderable, yet under the advice of a friend took to their books; and, while making No. 1 hands on their farms, made also very marked progress in mental culture.

In its very nature farm life is adapted to develop the intellectual and rational powers. The lad on the farm is taking lessons as he beholds the beauties of the landscape, and marks the changes of the seasons as he watches the growth of animals, and the rising of vegetation from seeds sown.

The employments of the farm call into exercise the corporeal energies by the labor performed, by the amusements of rural life and the excursions on horseback. The lads are delighted with the animals around them, which are the objects of their care and culture. Their dogs, colts, calves, sheep, goats and fowls, are all the best of their kind. Their peculium is a real school of agriculture. The best fertilizers on the plantation must be tried there, and the best seed sown in their patches. But while the farm-life suits the boys, it is the very thing to bring the girls to energetic womanhood. Abundant space is afforded for that exercise essential to give strength and elasticity to the constitution. Nor is it to be forgotten, that home in the country is the centre and seat of social joys. Few calls are made, but visits are the rage! A whole day is taken to discuss the news, and exchange sentiments and opinions in regard to passing events. Social gatherings take place by night and by day, by the old and by the young, at which the merits of a dinner or supper are discussed without any sort of embarrassment. On such occasions young men and young women figure grandly in horseback training. But, I think, such customs have obtained among the rural population, at least, since the days of Horace.

JAMES H. SAYE.

P. S.—This essay was read before the Fishing Creek Grange, October 3, 1872. Soon after the reading, I was taken to task by a member because I had not instructed the young man how to manage the wife I had located in his house. Now I desire to state here, for the benefit of that member and some others present, that if that wife was the peer of at least fifty young ladies of my acquaintance, she needed no management to become not only the helper of his joy, but in every department where a helper was of any use. If any feel a concern in this matter, I can point out the ladies.

Labor Contracts.

Negro labor, since the emancipation of our slaves, has not been profitable with many of our farmers and planters. This is owing, first, to the natural indolence and repugnance to work of the negro, a remedy for which we suggested in a former comunication to the RURAL CAROLINIAN. Secondly, to a want, on the part of the employer, of tact in the management of his employees. The exercise of a little more discretion and a more careful insight into the character of Cuffee will supply this deficiency. Thirdly to the want of a proper control of the time and services of his freedmen, without which freed labor will continue to be unprofitable until the last sound of Gabriel's trump.

This want of control is owing to the defective nature of the systems of contract in general use, prominent among which are the share and time systems. The remedy for this evil is the wages system. We have given the three fair tests, and can, therefore, speak from experience. Besides being the only system that will afford the employer the requisite control and management of his freedmen, it is a superior system of contract in every other respect. All to whom we have ever advocated it, readily admit its superiority, but, say they, there is too much risk in it; after paying off our hands, we fear we will have but little left, but if we adopt the share or time system we cannot lose anything even if we make a short crop.

This at best is but poor logic. Besides showing what might be termed over prudence, which very often is worse than too little, or none at all, affords the highest evidence of a want of energy and determination to win indispensible to the success of a planter.

Nothing is better calculated to make what the writer would term a slack twisted farmer than a feeling of security against loss in the event of a failure of his crop. On the other hand, the danger of losing, if only a short crop is made, is the highest incentive to effort and particularity in the whole scope of his planting interest; such effort and attention to business as will seldom fail to insure an income sufficient to leave him a handsome profit after all expenses are defrayed.

The true policy in hiring freedmen is to contract to give fair wages and good and full rations. Poor labor and discontentment will almost certainly be the result of low wages and poor rations. Remunerative wages and good and full rations, produce an opposite effect. In hiring, too, the qualities of a hand should be considered as well as physical capacity, and a good faithful laborer should always be given higher wages than an inferior one. This is but fair, and besides has the effect of stimulating the latter to follow the example of the former. Reduce the agreement to writing as soon as it is made, and let it be so plainly expressed as to be readily understood by all interested.

The contract should be binding on both parties, and the employer, while discharging in good faith his part of it, should hold his employees strictly to the performance of theirs. The want of firmness on his part whenever occasion requires the exercise of it, will prove a fatal error. When necessary to reprove an employee do it privately and in such a way as to increase rather than diminish his

regard for, and attachment to you. Little favors when deserved in the shape of vegetables, fruit, etc., and little things they may not have in time of sickness never fail to produce a decidedly good effect. A little plain talk too, to Sambo in the right way as soon as the bargain is made, as to the course of conduct by which the employer expects to be governed, and what he expects of him, is also productive of good. Our plan is to tell him that besides giving him good wages and a plenty to eat, we will treat him with kindness and consideration as long as he conducts himself properly, and that we expect all orders to be promptly and cheerfully obeyed; that if we tell him to peel the bark off of a long, tall, sleek, slim pine sapling, grease it with tallow and climb it feet foremast, we will expect him to make a faithful effort to accomplish the undertaking, and that if he fails after a faithful trial, we will be satisfied.

The first of last year we hired a freedman for the year without knowing anything of his previous character. A few days afterwards several friends who had long known him, hearing what we had done, said they were afraid we had made a poor bargain, as he had long borne a very bad character; that he was not only very unreliable as a laborer, never remaining longer than a few weeks at one place, but had the reputation of a rogue. By the treatment above indicated, he has made an excellent servant, being both obedient and faithful, and, we believe, honest.

St. Matthew's, November, 1872. HILL-SIDE.

Guano and Other Ammoniacal Manures on White Lands.

Allow me to add a few remarks to Dr. Pendleton's article on the difficulties encountered in the use of guano, and other ammoniacal manures on white lands. Those of Carolina are not, I presume, very different from those of Mississippi, many of which I have analyzed, while at the same time collecting all experience obtained in regard to their cultivation.

Chemically, I find these soils characterized (apart from the obvious lack of humus and clay) by:

1. Great scarcity of *phosphates*, which are generally found accumulated in the bog ore or "black gravel," by which they are underlaid.

2. Extreme scarcity of *lime*, which seems to have been removed by the same leaching process that extracted the phosphates.

Physically they are:

3. Generally badly drained. Though pervious and unretentive at the surface, the bog ore subsoil shows the existence of stagnant water at no great depth. Hence blight in wet seasons, which no kind of manure can obviate. Unless well drained, therefore, they are unsafe soils; do what you will, your crop depends upon a favorable season.

Now for the remedy. Next to drainage, (if that has not already been effected by natural means since the soil was formed,) the most important point is, doubtless, as Mr. P. says, to render the soil more retentive. Hauling clay will rarely

pay; hence the turning-in of green crops, to increase the amount of retentive humus, is indicated. Unfortunately, these soils are peculiarly ungrateful towards this improvement. The decay of vegetable matter in them is slow; and when completed, scarcely any humus seems to remain to repay the trouble.

From a chemical point of view, this is perfectly intelligible. But chemistry also suggests the remedy, which, in some places, nature has employed on the large scale, *e. g.* on the sea-coast of Mississippi. It is simply *lime*, used either in the shape of marl, or (in much lighter dressings) as quicklime. It not only hastens the decay of vegetable (as well as animal) matter, but prevents effectually the waste of humus through the influence of atmospheric oxygen and seepage water. The retentiveness of the soil is thus rapidly increased, and, in a few years, it will respond to any manure adapted to the character of the soil. But I cannot help thinking, that if our farmers were to pay out a little less for ammonia and more for phosphates, potash and lime, with due attention to other improvements, they would be better served by what they spend for fertilizers. Guano on these white soils, or on poor sandy ones generally, is the last thing that ought to be used; it acts like brandy on a consumptive patient.

There is no need to assume that muriatic acid was set free from the potash and soda salts used in the experiment cited by Mr. P. These soluble salts themselves, in a soil containing but little clay, and badly drained, would in a dry season cause the rust, or rather the blight, complained of. Of this, I could adduce hundreds of examples in this State.

One of your correspondents asks about a remedy for red ants. I have vainly tried to poison them, like the cockroaches; but have never failed to get rid of them by following them up to their habitual point of ingress, (usually a crack of some kind,) and, while they were busily at work, pouring on a spoonful of oil of pennyroyal. The operation requires to be repeated occasionally, say every year; but if ever any made their appearance again the same season, a few pods of cotton moistened with the oil and laid about, would promptly frighten them off.

University of Mississippi, November, 1872. E. W. HILGARD.

Underdraining for Profit and Health—II.*

DRAINING LARGE MARSHES.

In draining large marshes, where water backs up or overflows from a river or lake, the first thing to be done is to construct a dike sufficiently strong to secure the field to be drained against this overflow.

If the surplus water flows down from the uplands, or issues from springs near the foot of a slope, spreading over the surface of the low ground, a deep drain should be made between the slope of the marsh, called a 'catch-water drain,' for the purpose of receiving the water as it spreads along on the surface or through the soil at a period of high water. A good drain in the right place, near the source of

*"Report of the Department of Agriculture for 1870."

surplus water, will often be more effectual in draining the soil than four times the length of drain made directly through the marsh. Marshes are always supplied with surplus water from a source higher than the surface. In many instances a small stream flows directly through the marsh during the greater part of the growing season, and at periods of high water the stream will be so large that the water cannot be conveyed in an underdrain. In such a case the first step will be to cut a broad, open ditch through the middle. This should be done when there is little or no water. In some instances laborers must do the first excavating in mud and water ankle deep. In case the natural course of a stream lies directly across a field, an open ditch, to carry the flood water, may often be made more conveniently on one side of the swamp, which will sometimes serve the double purpose of an open ditch and a main drain, into which branches may empty. If, for instance, as is frequently the case, a spring issues from one side of a swamp, so that the water spreads over the surface of a broad area, ascertain and stake out the most convenient place for a deep underdrain, to extend from the spring to some river, and let the water be all collected at the head of a ditch before any portion of it is allowed to spread over the low ground. One good drain will sometimes be sufficient to relieve several acres of all surplus water.

DITCHING IMPLEMENTS.

Our frontispiece represents the spades and scoops used in digging the ditches for underdrains.

Figs. 4 and 5 represent two steel ditching-spades, of the most approved forms. Fig. 4 represents a steel spade of extra length, ironed extra strong on the handle. Fig. 5 shows a concave blade, having a circular edge. This spade is made of good steel, properly tempered and polished, and is much lighter than the other, although very strong. This concave blade is used in removing the first sod-spading, when excavating narrow ditches for small tiles. Fig. 4 is designed for digging in heavy, unctuous clay, where a tool of unusual strength is requisite. To work easily, steel spades should be kept bright on both sides, and the blades should be ground to a sharp but abrupt edge. If spades of the desired length and breadth of blade cannot be obtained readily at country stores, the nearest manufacturer of spades and ditching tools could be addressed, with directions for making tools of the desired form and size.

Fig. 6 represents a spade of the latest improvement. The blade is twenty inches long, five inches wide, and circular at the entering edge. This style of spade is designed especially for excavating deep and narrow tile ditches. The handle is longer than the handles of ordinary spades. The blade is concave on the front side, and is usually made of steel neatly polished. As the shoulder at the head of the blade is quite too narrow to receive the digger's foot, an iron adjustable shoulder is held by two screw-bolts to any desired place on the handle. With such a spade, after the first spading of sod has been removed, a digger can sink a ditch to the desired depth while standing on the bank. Fig. 7 is a steel spade similar to Fig. 6, yet having a shorter blade. Fig. 8 represents a very convenient and useful tool for shoveling the loose earth from the bottom of ditches that are of sufficient width to receive the blade. The corners of the entering edge are made square and sharp, to facilitate dressing out the corners of the bottom of a ditch.

Cleaners are valuable and convenient tools to aid in excavating very narrow ditches. They are of several forms, as represented by the accompanying illustrations. Fig. 9 should be hung similar to a round-pointed shovel, so that the blade will rest flat on the ground when the handle is held across one knee. The blades of the other cleaners, Figs. 10 and 11, are hung at about the same angle as a broad hoe, so that the operator can stand on the bank of a narrow ditch and scoop out the loose earth from the bottom. In many instances where the earth to be excavated is

soft, these cleaners are employed to excavate the ditch after the first spading has been removed, and to grade the bottom while the operator stands on the bank. Fig. 11 is a slender scoop having a long handle.

The blades of such cleaners should be made of good steel, with a strong shank and a handle that cannot be broken by a careless thrust. It should be remembered also that such cleaners are not designed to endure the strain of a pick or a crow-bar. Hence the edge should not be driven down into compact ground, and force applied to pry more earth than the tool can lift at one time. All such tools are made strong and light, to handle loose and yielding earth. But diggers who have not been educated to use tools with care will often employ a cleaner when they should use a crow-bar.

After the spade has been used for a few hours, unless the sole of the boot is unusually thick and hard, the foot which is employed to thrust in the spade will become tender and lame. To prevent such an occurrence, all skilful ditchers employ a spading-iron, to be lashed to the hollow of the foot.

CHEAP AND CONVENIENT DRAIN LEVELS.

Figure 12 represents a wooden level similar to one given some time ago in the RURAL CAROLINIAN. Any mechanic can make one in half an hour.

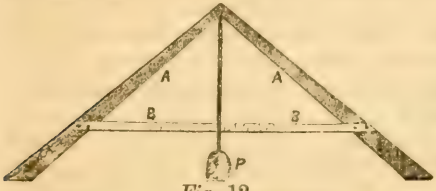


Fig. 12.

A A are pieces of light wood one inch thick, eight feet long, four inches wide at the lower ends, and two at the top; B is a graduated cross-bar, screwed to A A; P consists of a plumb and line. Before the graduated scale is made on B, let the level be turned half way around. If the plumb line indicates the same point or mark, the level is practically correct.

Figure 13 represents a cheap spirit level, easily made by any worker in wood. The part represented by A should be about eight feet long and five inches wide at the middle; B B are legs three or four feet long, and C C are braces. The spirit vial is set in a recess, cut in the middle of A. A joiner's "spirit level and plumb" may be fastened to the side of A with two screws. Then the sight is taken over the upper edge of A. In some instances, if there is no wind to blow the plumb line, one has a *true* steel square, he may strike a level pretty correctly by placing the long part of a steel square on two stakes and plumbing the arm of the square as it hangs down. A small thread should be employed as a plumb line for such a purpose.

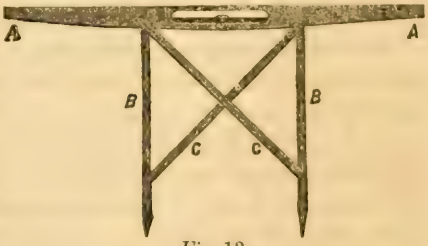


Fig. 13.

Timely Farm and Plantation Topics.

Does it Pay to Haul Swamp Muck?

There is no doubt but that the swamp lands of the South are mines of wealth, not only as soils of unsurpassed fertility to be cleared, drained and brought into cultivation, but also as sources from which to draw manurial elements for the renovation and improvement of adjacent sandy uplands. For the first of these objects, they are, in the main, practically sealed to us at present, for want of the heavy

capital required to improve them. As deposits of fertilizing materials of great value, mineral, animal and vegetable, might we not oftener draw on them with profit? With our expensive labor, a bulky manure, like swamp muck, can not be hauled very far with profit, but can it not often be applied to a field bordering on the deposit in such a way as to pay handsomely for the labor expended on it. We are inclined to think so, but there is a lack of data on which to base an exact statement of the case. We want carefully tried experiments, with this material, running through a series of years, the cost of application and the increase of production being carefully noted.

What is meant by Swamp Muck.

The following extract from an article on the foregoing subject in the Agricultural Department of the *Mobile Register* and presumably from the pen of its well informed and careful editor, gives a correct idea of what is meant by swamp muck:

By swamp muck we mean the dark-brown or blackish matter found in our low lands or swamps. It is a fine fertilizer, from the fact that it contains all the elements of plant food. Decayed vegetable matter makes up the bulk of its composition; but with this may be reckoned a goodly proportion of animal matter resulting from the dissolution, through generations untold, of insects, fishes, reptiles and other creatures peculiar to the swamps. So, you see, there could be nothing entirely wanting. The ash of a good article of swamp muck has been made to foot up in one hundred parts as follows:

Lime	17.03	Magnesia	0.36
Oxide of iron	24.00	Silicic acid	0.90
Carbonic acid	5.00	Phosphoric acid	2.55
Sulphuric acid	3.29	Insoluble matter	43.39
Potash	1.48		

The Different Classes of Swamp Muck.

The writer quoted in the preceding paragraph divides muck into first, second and third classes. The first and best is that found at or near the surface. It is a soft, powdery substance of a dark-brown color—not adhesive when wet, nor compact when dry. The action upon it of the atmosphere and alternate rains and droughts, and, if far enough north, the freezes, have rendered it friable and fit for immediate application to the land. But it is usually a very thin stratum, and in taking it up for direct application, one should be careful not to work too deep. The second class generally lies just below the first, is of a darker color, and is adhesive when wet, and hard and crumbly when dry. It will not do for direct application to the soil immediately to be seeded, owing to the fact that it contains a rather unhealthy proportion of acids. But composted with other substances a few months and it is all right. The third class, usually making up the base of the deposit, is often in layers or strata, which, when taken up in blocks and dried, readily separate from each other and exhibit the impression of vegetables in the seams.

Tillering of the Wheat Crop.

One of the marvels of the wheat plant is its capacity to multiply itself by tillering. An Englishman sowed a few grains of red wheat June 2d, one of the plants of which had tillered so much by the eighth of August that he then divided it into eighteen others, all of which were planted separately. In a few weeks so many of these had

again multiplied their stalks, that he had set out 67 altogether to go through the winter. With the spring growth all these began tillering, so that in March and April a new division was made, and the plants increased to 500. It was believed that another division might have been made, and that it would have increased the number to 2,000. The 500 grew most vigorously, exceeding plants as ordinarily cultivated. When harvested, a single plant yielded over 100 ears, and the whole number of ears produced was 21,109, or more than 40 to each divided plant; the grain measured 3¾ pecks, weighing 47½ lbs.

Good Land, Good Corn, and Good Farming.

The Charleston *News* says: "Mr. James Jones, one of the most enterprising farmers in Fairfield County, raised this year, on seven acres of river bottom land, seven hundred and eleven and a quarter bushels corn, eighteen thousand pounds fodder, and the land is now covered with pumpkins." Mr. Jones should have reported the mode of cultivation and the fertilizers used. The land was, undoubtedly, excellent, and the culture thorough and judicious; and what Mr. Jones has done others can do on similar soils. Is it not worth while to try?

Gleanings from Many Fields.

Williamson's Farm Steamer.—The Buck's County *Intelligencer*, gives an account of the performances of Williamson's steamer in ploughing by direct traction in the farm of David Landreth and Son, at Bloomsdale, Pa., sometime last fall, the ground being very wet at the time, which made the test the more severe for the engine. We expect to give a cut and description of this steamer in our next number. The *Intelligencer* says:

The ground chosen for the trial was covered with a rather stiff sod, but the soil was deep and loose below, and with all the variety of surface for a thorough test of ploughing, both on the level and up and down hill. The ploughs entered the ground promptly at the bidding of the fireman, who, in addition to his other duty, had charge of the apparatus for this purpose as well as for lifting them out of the ground at the other end. It ploughed a uniform depth of about seven inches, each furrow being turned over as nicely as if done by an experienced ploughman in the usual way. At the end, the ploughs were taken from the ground quickly and easily, and the turning of the steamer and ploughs to enter fresh furrows on the other side of the enclosure, was done as speedily and with as much facility as with an ordinary pair of horses. The plough was run at different degrees of speed from that of a common plough team to double that rate.

By increasing the rate of speed, the ground is pretty thoroughly torn to pieces, and we should think that were it sufficiently dry and in good order, it would not need much harrowing afterwards. Each plough makes a furrow a little over a foot in width, the whole five at a sweep ploughing a space of six feet. When all six of the ploughs are attached, it turns up a space of a little over seven feet wide. The work was done so well, that the trial was successful even beyond the expectation of the inventor, who was present, and all others who witnessed it.

How to Avoid Drought and Wet.—Farmers are sometimes much injured by too much moisture in the ground, and still oftener by a lack of moisture. The

same remedy will, on any tolerably retentive soil, and in all but the most severe cases, cure both these evils. The great drawback is that this remedy is an expensive one. It consists in underdraining, supplemented, in some cases, with subsoiling. Mr. S. G. Foster, in an Essay before a Northern Farmers' Club, says:

We must underdrain and subsoil our land if we would get rid of the trouble with wet or dry seasons; by the term subsoil, I do not wish to be understood as advocating the throwing up on top of the land a portion of the subsoil, but simply stirring it up and leaving it where it now is. The advantages of underdraining and subsoiling are that, if thoroughly done, they will nearly free us from any inconvenience from an uncommonly wet season by absorbing and conveying from the land all surplus water, while in an unusually dry season, the ground being porous to a greater depth than we usually have it, will hold more moisture, and as the top of the ground dries this moisture is drawn upward, and prevents the roots of crops from being dried up. A piece of ground trodden hard will not absorb water to any amount.

A Lady's Experience with Poultry.—Mrs. M. J. F. writes to the New York *World* about what she has done in raising poultry for profit. She did well. Some of our lady readers, living near a good market, might follow her example with similar results:

I commenced March, 1871, with five hens and a rooster. The hens all laid and sat twice, and raised eighty-eight chickens; twelve of the largest I sold in September for $10 40. Grain being low, I thought it might pay to keep the remainder until they grew heavier; accordingly I did not sell again until February, when I sold sixteen pairs, receiving for them $41 40, and kept the balance until the present month, realizing from their sale $54 37. Total amount received being $106 17. I kept no account of the eggs laid by the pullets during the winter, nor of the grain fed out. They were well cared for and eat considerable, I know, but I am very well satisfied with the result.

Home-made Phosphates.—Dr. Daniel Lee, the veteran agriculturist and chemist, thinks that sea-salt ought to be manufactured in large quantities for agricultural purposes, and to be used at a distance from the coast, where the land is deficient in the salts of lime, soda and magnesia, which it largely contains. He says, further, that—

By adding finely-ground South Carolina phosphates of lime to sea-salt, and mixing both with fermenting stable manure, the farmer would have a fertilizer of great value and at a moderate cost. The skilful farmers of Norfolk, England, bury bones and other ground phosphates in hot dungheaps to dissolve them. In this way they save the great expense of using sulphuric acid. Southern farmers should study and practice closer economy in feeding the ground that feeds them. Hungry land is fed with little skill or knowledge.

Fowls as Guano Manufacturers.—A correspondent of the *Germantown Telegraph* has a guano factory, the processes employed in which he describes as follows:

For several years past I have had what bones were obtained on the farm manufactured into guano in the following manner: From time to time as there are any bones to dispose of, I take them to my hen house, lay them on a flat stone, and with an old ax break them up fine and let the hens eat them. This is all the labor that is required, and the bones with the other articles of food which the hens eat are digested and made into as good guano or manure as I have ever used for any purpose. It is not necessary to wait a year for guano made in this way, for it is ready to use at any time that it is wanted.

Treatment of Hen Droppings.—The same correspondent quoted in the last paragraph saves and prepares his hen-made guano in this way:

In the hen house under the roost there is a tight floor, and over this floor I spread dry, fine earth or muck, and occasionally as the manure accumulates, more earth is spread over it. When I wish to clean out the manure, the contents are shoveled over and mixed together, and it is then in a shape that it can be used at any time or place. My practice is to clean out spring and fall, and by having a supply of dirt to use when wanted, I manufacture and save, with very little labor or expense, a very valuable fertilizer.

Horticulture and Rural Adornment.

Horticultural Hints for January.

January is generally our coldest month, though sometimes the severest freezes occur towards the last of December. Throughout the month, we are liable to frosts of more or less severity; but we have observed that in the latitude of Charleston and southward, the weather, in most seasons grows gradually milder after the twentieth. Further north, as in the central and upper parts of the South Atlantic States, this amelioration is less marked, or comes later. In ordinary seasons, many of the hardier vegetables grow finely and are seldom injured in the least by the slight freezes which occur. In planting during this month, as well as the last, the gardener must be content to take some risks, even in the case of the hardiest species. This, in the limited operations of the family garden, he can well afford to do, for failure costs merely a little not unpleasant labor and a few seeds, and success rewards him with an early and excellent crop. Our remarks in the December number, on protecting garden plants, should not be forgotten. We may add that an excellent contrivance for securing plants in rows against frost consists in two boards, a foot or more wide, nailed together at the edges in the form of a three cornered trough—made of light thin boards, these are easily handled and a few such protectors will be found very useful. It is better that the ends should be closed, though the mere shelter of the lateral pieces will be sufficient in case of light frosts.

———The pea is one of the hardiest of our vegetables, and is seldom wholly killed by any degree of cold experienced in our climate. The greatest danger is from freezes occurring at about the time it is pushing its delicate sprout through the surface of the soil, but this can be prevented by a slight covering of straw, hay, or trash scattered over the rows. We would now, from the first to the twentieth of the month, put in the seed for the principal crop of early peas, planting again, but not so largely, about the end of the month for a succession. If, however, several varieties—early medium and late—are now planted, the table may be supplied with this excellent vegetable for a long time without further planting. It is best to

plant in double rows, whether sticks are to be used or not, as each row helps to support the other. Where, as in cities and towns, sticks are difficult to procure, peas may be planted, with advantage, in circles of from one and a half to two feet in diameter, when a single bushy stick, in the centre, will support a large number of plants. Where there is no ground sufficiently rich from previous manuring for the pea crop, well rotted compost should be used in the drills.

———It is the general custom throughout the South to plant Irish potatoes about the first of January, but nothing is gained, as a general rule, by putting them in so early, north of Florida, and in this latitude, there is often positive loss, for if the weather happens to be mild for some weeks after planting, they come out of the ground only to be cut off by frost, unless protected by some kind of covering thrown over them. In latitude 32° and southward, we recommend planting from the 10th of this month to the middle of February. If you want good, mealy, fine flavored tubers, do not use much crude stable manure. If the whole garden has been manured in the fall as we advise, they will need none. Chip-manure, half rotted straw, hay, leaves, and other vegetable refuse, with a good sprinkling of wood ashes, and a little well rotted cow-dung in the drill or furrow, will make a fine crop on suitable soil, and ensure their good quality.

———Though Beets, Carrots, Radishes and Lettuce, prove perfectly hardy in ordinary seasons, after they have attained a growth of an inch or two in height, there is risk in planting them, even south of latitude 32° during the present month, as a hard freeze, just as they are coming up, is sure to kill them unless protected. Of Lettuce and Radishes, it is always well to have some in a cold frame for security. From the middle to the last of the month, a few Red-Top or White Dutch Turnips may be sown, protecting the young plants with a slight covering of leaves or dried grass.

———Cabbage, of some early, quick growing kind, like Little Pixie, may be sown in the open ground, in a sheltered spot, or better still, in a cold frame. They will make a late spring crop. Later kinds will not have time to grow before the worms will become too destructive. Kohl-Rabbi should be planted in the same way, and is less liable to be destroyed either by frost or by worms.

———In the flower garden little planting can be done with advantage, but if any of this work directed for November and December has been neglected, it may be well to try now such seeds as sweet peas, larkspur, sweet alyssum, pinks, and other hardy annuals.

———In planting seeds of any kind at this season of the year, it is best that the rows should be slightly elevated above the general surface, and the covering be light. A good way is to sow on the surface, and then scatter or sift over them a little vegetable mold or light soil.

———Hot-beds should be made during this and the next month; in January, here in the Low Country, in February, a little further north, where the plants from them will not be wanted for planting out quite so early in the spring.

The Guava and its Cultivation.

The guava is a native of tropical countries, the product of an evergreen tree from thirty to forty feet in height, with graceful spreading branches and light green foliage, changing on the ends of rapidly growing shoots to a soft ashen and pink hue. It is a hardy tree, and old fields and abandoned plantations often become covered with dense thickets of guava scrub. There it is ever blossoming and ever bearing; but, in Florida, where a number of the hardier varieties have long been naturalized, it blooms chiefly in the spring and ripens its fruit in September and October. The fruit is of a bright yellow, in shape and size resembling a small quince, and is filled with a rich sub-acid pulp, containing many small hard seeds like grapestones. From this fruit is manufactured the famous guava jelly, of commerce—the finest and richest in the world—which, when properly made, will keep for several years. It is also excellent for stewing, preserving, and making pies or dumplings, as well as very wholesome and grateful when eaten raw.

People are not generally aware that by training in bush form, so that the branches may be bent down and covered during the winter, it may be successfully raised out of doors far above the tropics, in fact, in any of the Gulf States, and even further north. It will withstand uninjured any degree of temperature down to about twenty-eight or thirty, Fah.; at which point, unless protected, it will be killed to the ground, the roots, however, sprouting up again when spring opens. Its rapid, continuous growth is not even checked by ordinary frosts, and as it blossoms quite late in the spring, the crop of fruit is not liable, like that of the peach tree to be enticed out prematurely by a few bright, warm days, only to be blasted by a sudden change to colder weather. It is the most profuse and certain bearer of any tree with which I am acquainted; and as the fruit, like the fig, does not all ripen at once, a much larger quantity can be sustained than otherwise would have been possible. I have a bush in my garden, not yet four years old, which, having been left unprotected, was killed to the ground winter before last, Christmas day, 1870, when the mercury sunk to 23°, and yet this past summer it ripened over two bushels of fruit. I am perfectly satisfied that in any of the Southern States where a warm season may be expected, lasting for a period of five and a half or six months, without any *very* severe frosts, the guava can be successfully raised. In all such regions, therefore, it should be found in every garden, and only a few bushes will supply as much fruit as a family of ordinary size would consume. So highly esteemed is it for making jelly and preserves, that, during the past season, I have known it to be eagerly bought in Jacksonville market, here on the St. John's river, at the rate of two, three and even four cents each, in lots from a peck upwards, by those who were acquainted with its excellent qualities.

It is propagated by suckers, layers, cuttings or seeds, but more successfully from the latter. The seed may be planted in hot beds or boxes of rich earth, precisely like that of the tomato or pomegranate, and usually requires a month or two to germinate. When the plants are a few inches high, they may be moved either to the nursery

rows, or to the places where they are destined to remain, and kept watered and shaded till they begin to strike root again. The tree is a gross feeder and rank grower, and under generous culture will advance with great rapidity, coming into bearing about as soon as the peach. Train low, by pinching back if necessary, so that the main branches will diverge at the surface of the ground, and in the fall, as soon as the weather is cool enough to make ice, bend down the branches as low as possible, secure them by weights or pinning, and cover lightly with trash and earth. Let them remain so all the winter. In the spring, as soon as danger of ice is past, uncover, and straighten or stake them up again. They will come out of their winter bed fresh and green, ready to start off growing rapidly at once. If, in process of time, a bush becomes too large and stubborn to be treated in this manner, some of the smaller branches may be laid down to form the basis of a new head, and the thick, unyielding ones, should they not survive the winter, may be pruned away. If a number of trees are set in orchard form, they should be placed at least ten feet apart each way, for, with this low training they will, in several years, quite cover the ground with a dense thicket. There are a number of varieties of the guava cultivated in Florida, some with white, others with yellow or red pulp, and all reproduce themselves, with but slight variations from the seed, so that grafting or budding is unnecessary.

Nature has so bountifully showered her choicest gifts of fruit and climate upon the southern people, that they trust too much to her, and are altogether too fearful of a little painstaking. In the Northern States whole plantations of tender varieties of raspberries and grape vines are every fall laid down and covered in this same manner.

This article is written in the hope that attention may be drawn to the culture of so excellent a fruit as the guava, which, if generally introduced into our southern markets, would, when its valuable qualities became more widely known, always meet with a ready and profitable sale. EDMUND H. HART.

Federal Point, Fla.

A New Plan for a Hot-Bed.

We constructed a hot-bed winter before last after an idea of our own, which both then and the winter following proved quite a success. As we think it superior to the hot-bed in ordinary use, we will give you the plan for the benefit of your readers.

The pit should be a parallelogram, its longest sides running due east and west, not less than four and a half feet deep, and its sides bricked and cemented so as to be impervious to water.

Place on the bottom a layer of about six inches of straw, after being well pressed together. Take then, equal parts of fresh and very strong stable manure, and green cotton seed; moisten and mix the two well together. Tramp the mixture on the straw until the thickness of about three feet is obtained. Complete the job of filling up the pit by placing on this rich garden soil thoroughly pulverized.

After the bed is completed, place over it a frame work for enclosing it on three

sides, the ends pointing due north and south. This frame we cannot better describe than as a bench with very long legs extending well out both at the ends and sides. For a bed, say six feet by four, the top or beam of the frame should be about eight feet in length, and four feet from the ground; the distance between the legs at the ground from side to side should be nine, and from end to end eleven or twelve feet. Draw three lines on the ground, one running a foot and a half from and parallel with the south or front edge of the pit, and the other two a foot and a half from and parallel with its ends or east and west sides. Let the legs at the south end, which should extend three and a half feet out from the top of the frame, rest in angles formed by these lines. If in proper position, the end of the frame at the top in front, will be directly over the centre of the bed. Board up the sides and north or rear end of the frame; place on the boards a thick layer of straw, and then one of about six inches of well pressed earth. The frame, it is hardly necessary to say, should be very stout, and should have an additional leg or support on either side about the centre. The object in having the top of the frame to recede so far from the front of the bed, is, as will be readily perceived, to give as full scope as possible to sunlight and rain.

The advantages of a hot-bed thus constructed over one of the kind in ordinary use, are many. With warmth sufficient to produce a temperature as genial as our sunny southern clime during the month of May or June, an inexhaustible supply of pure, fresh air, and the healthful effects of the sun's rays the greater part of the day, plants in it grow off more rapidly, are more hardy, and take root more readily when transplanted.

It is also cheaper, and requires much less care and attention in its management. Occasional waterings will be necessary, particularly of the back part of the bed, as it is never effectually wet by a fall of rain except when accompanied by wind from the South. Let the waterings too be copious. During moderately cold weather a wide board placed against the front of the frame on the ground is all that is necessary to protect the plants from frost at night. Even this precaution we hardly think strictly necessary, though it is easily used. Two wide boards will be ample protection during the severest cold ever experienced in this latitude. The writer is of the opinion that he can so improve upon his plan as to be able to have a supply of certain vegetables the winter through.

We are also inclined to the opinion that it can be made to answer admirably the purposes of a green-house. HILL-SIDE.

St. Matthew's, December, 1872.

Fruit and Fruit Culture.

A great deal has been written in our Agricultural Journals on the subject of diversifying our pursuits, developing the smaller industries and the like, and considerable stress has been laid upon fruit culture as likely to be one of the most profitable of the smaller industries. We think that the interest of the nurserymen has been more looked after than those of the fruit grower. The flattering accounts blazoned in the newspapers of the high prices paid for fruit in the North-

ern cities, has brought a goodly number of amateurs to grief. There is no dou t of the fact, where one owns an orchard, on a *short*, direct line with a large city, and can get his fruit to market in good condition, and at the nick of time, he may realize a handsome profit on his investment; but wherever there is a chance for delay or mismanagement, a few accidents will sweep off the profits of the whole season.

As for the idea of supplying your country villages with fruit, a half bushel basket of good fruit will glut the market any day. In fact, there are very few persons now-a-days who can afford to pay for such a luxury, and a certain class of gipsies, to the manor born—"*fruges consumere nati*"—too, keep up a running supply at lower prices than the proprietor can afford. Everybody has heard the anecdote of Paddy meeting a Yankee who was underselling him in the broom business: "I can't see how you do it," says Pat, "for I stale the straw." "Oh," rejoins the Yankee, "I steal the brooms ready made." The explanation was, doubtless, perfectly satisfactory. How to remedy this kind of competition is not so easily explained. The nurseryman would, doubtless, say—plant the more trees—plant enough for the gipsies and yourselves too.

This sounds very well, but it costs something more than every one can afford now-a-days. Nevertheless, every man who owns a rood of ground, should plant as many fruit trees, of the varieties best adapted to his soil and climate, as he can *properly care* for. Some five or six varieties of apple, pear or peach, will include about all that are really desirable; and twenty trees, well taken care of, will yield more pleasure and profit than a hundred of "good, bad and indifferent." Look about you and find what varieties are suited to your soil and climate. Don't be governed by the reports of nurserymen or newspapers, and always be planting a few peach stones of the best varieties, and make selections for yourself.

There is one way of securing a profit from fruit-growing, not much practised, that is entirely practicable. That is to dry it. It will not cost much to construct a kiln for drying fruit, and it can be done very rapidly and economically. We know a gentleman who has tried it on a small scale and been successful. Dried fruit is always in demand, and there is no danger of loss from delay on the road. This gentleman, of whom we speak, realized something like four dollars per bushel net for his dried fruit. This is certainly better than feeding to hogs, stilling into brandy, or leaving to ripen for the gipsies. ***.

Seasonable Orchard and Garden Notes.

Old Plaster for Grape Vines.

An Italian correspondent of the London *Garden*, in planting a number of grape vines along side his garden walks, threw into the holes some lumps of old plaster scattered a little earth over them and then planted the vines in the usual way. "The result," he says, "has been wonderful; the vines, which were not half an inch thick when planted three years ago, are now two inches and more in diameter, and bear finely. The grapes are also freer from disease. Other vines, not so treated, are

much smaller and produce less, the fruit being also more liable to disease. To try the effect of this plaster, in planting two American black walnuts, we put the plaster to the one and not to the other. The former grew twice as fast as the other. Last year we dug about the roots of the one to which no plaster was put, and we threw in seven or eight large lumps of plaster among the roots; the trees are now both of the same size, and though only four years old, are 16 or 17 feet high."

The French Hybrid Gladiolus.

The Gladiolus, in its modern improved forms, is one of the most magnificent of all the bulbous flowering plants, and being of easy culture and growing in any well enriched garden soil, commends itself to every lover of flowers. Of the various classes of gladioli the French Hybrids are the most stately and effective. "They are," Mr. Dreer says, "of a robust, erect growth, with green sword-shaped leaves and magnificent flower scapes rising from 3 to 5 feet in height. The colors comprise the most brilliant of orange, scarlet and vermilion tints, upon yellow and orange grounds, including a graduated scale of intermediate shades, from white, with rosy-blush and salmon rose tints, to a salmon red and nankeen; from blush-white, with purple crimson throat and marginal streaks of pink, to light rosy salmon grounds, with flakes of deep carmine." A succession of bloom may be had from May to August by planting at intervals from February to April in this climate, reserving the strongest bulbs for the latest planting. The bulbs are taken up in the fall and protected from frost.

A Beautiful Climber—Manettia Cordefolia.

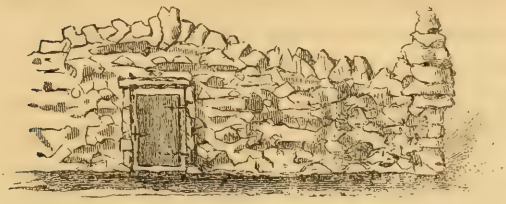
For our climate, there are few better climbers than the manettias, of which the *cordefolia* is the best known. It is killed down to the ground by frost, but with a slight protection from a covering of straw or grass or a shovel full of stable manure, the roots survive and it springs up again on the approach of warm weather. The vine is a very graceful one and when covered with its bright red, tubular (cuphea-like) flowers few climbers are more showy. For a small trellis or some other ornamental support, or to ramble at will over the shrubbery in a corner of the garden nothing is better. M. bicolor (red and yellow) is also desirable.

The Southern Queen Sweet Potato.

This variety has been pretty widely disseminated during the past two years, in some cases under the foregoing name and in others as the Brazilian sweet potato. It is a handsome potato, and on suitable soil makes a large growth and produces a

heavy crop; but as a vegetable for the table it is utterly unfit to eat, being very watery and insipid. It may be a good variety to raise for stock, though we think its nutritive value must be less than that of the common varieties.

Back Gate of an English Garden.



Where boulders, or other loose rocks abound, stone fences can often be built with economy, and in the immediate vicinity of the homestead may be made to contribute to the work of adornment, by being thrown into picturesque forms, as in the accompanying illustration. Such a wall draped with ivy or some other trailing vine would be a beautiful object as well as an enduring barrier. Readers in rocky regions may find in this English garden gate a hint, at least, at something practicable with them.

Double and Single Flowers Again.

A correspondent of the *Horticulturist* says: "In an invoice of tree and other seeds which I imported from Peter Smith, of Hamburg, some three years ago, was a lot of ten weeks stock. I planted a sample of the several varieties; a large proportion of them came single. This spring I scattered the balance (from the same packages) in a box in the greenhouse, hardly expecting it to grow. The blooms are nearly all double. Is this an ordinary occurrence? I do not remember having seen it so stated."

Natural History Applied to Agriculture.

Specimens of insects, securely packed, (according to instructions given in The Rural Carolinian, for April, 1872,) with letters of inquiry, entomological notes, etc., should be addressed, (post paid,) to Mr. Charles R. Dodge, Washington, D. C.

Answers to Entomological Correspondents.

Strachia Histrionycha.—If the chickens really will eat this insect, as stated by Mrs. P. T. H., in our last issue, we are truly glad, and hope our friends will encourage them in it; but we fear there may be some mistake, particularly as our correspondent also states that the bugs are likewise found on grapes and strawberries, for we have never seen them, or heard of their injuring anything but cabbage and other cruciferous plants.

All the insects of this order, are extremely acrid, and consequently are very distasteful, as any one may experience, or has experienced while eating fruit directly from the vines. Entomologist, may sometimes be in the wrong, as well as other people, but before we make any positive statements either way, we should be pleased to have our correspondent send us some of the insects she has seen the chickens devour. We thank Mrs. H. for her communication, and trust that we may hear from her again.

How to Prepare Butterflies.

A lady writes to know how to preserve butterflies for framing; and as the process is the same in preparing these insects for the cabinet, a short article with figures may prove both interesting and instructive. The first step is to catch the insects, and as success depends in a measure on the way they are caught, a few useful hints on that subject will not be out of place.

The collector should be provided with a net, collecting box, and a small bottle of ether, chloroform, or benzine, having a camel's hair pencil fastened to the cork on the inside. The net which has been described before for catching noxious insects, can be made very economically by taking a piece of brass or iron wire, one-eighth of an inch in diameter, and about three feet six inches in length, bent in the form of a circle, leaving about three inches of each end to form the shank or handle. This is to be thrust into the end of the net rod and secured, or may be fastened into a socket, so that the rod and net may be detached when not in use. The rod should be about five feet long, and light enough to swing with one hand. The bag is made of Swiss muslin, shaped like the annexed figure, (Fig. 1.)

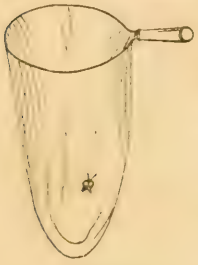


Fig. 1.

The collecting box is made of pine or other light wood. A convenient size is nine inches long by seven wide, and two inches deep at the sides, the bottom to be made rounding to fit the small of the back; on one end is placed a cushion for pins, and on the outside of the cover a pocket, which will often times prove very convenient. The box can be suspended from the shoulder, or may be fastened to a belt.

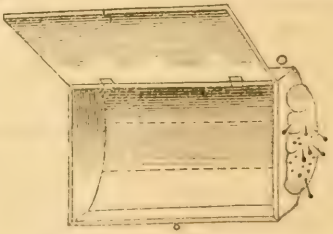


Fig. 2.

As butterflies are the most delicate of all insects, they should be carefully handled to avoid injuring the specimen by rubbing the dust or scales from the wings. After they have been taken in the gauze net, the lower part of the bag should be thrown over the mouth by a slight twist; the insects are then killed by slightly pinching the thorax, or by the administration of a little of the chloroform or benzine, after which they may be removed from the net, pinned and placed in the collecting box; or if our collector is a lady, and does not wish to carry a collecting box, the insects should be carefully placed in old envelop corners, with the wings *folded together over the back*. With small or delicate moths, and many of them are very beautiful, greater care must be exerted in taking them from the net; our plan has been to use an open-mouthed bottle, (about a six oz.,) having a piece of cotton in the bottom slightly moistened with chloroform; the insects may be easily driven into it while yet in the folds of the net, the cork replaced, and in a few moments the insect is dead.

In setting a butterfly or moth, insert the pin into the thorax, holding the insect between the left thumb and fore-finger, with the wings partly folded back, and gently push it through, leaving about three-eighths of an inch to hold it by, then place in the setting board; draw the wings forward into a natural position, and

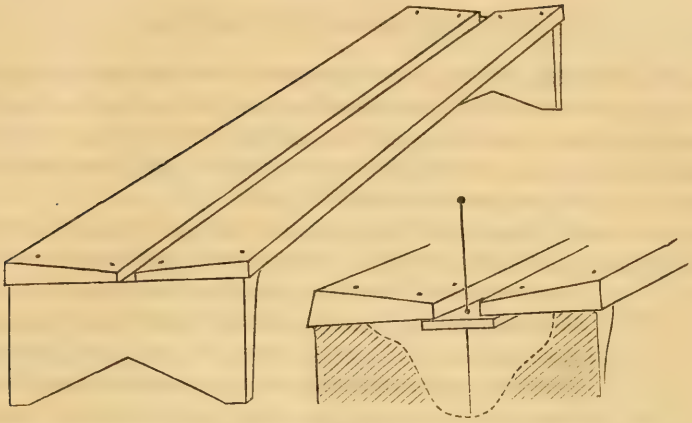


Fig. 3.

secure each with a small pin near the body; then cover with card strips, pointed at each end, or with small pieces of glass. We give two styles of setting boards, which may be made for a trifle.

Fig. 3 is made by fastening two strips of wood about a foot in length and an inch and a half in width to two uprights of the same height, leaving an open space of half an inch between; thin strips of sheet cork, or corn pith, are glued on underneath, through which the pins are thrust. The sizes may be varied for different insects. Fig. 4 is merely a block of wood three inches square and one inch thick, with an upper groove half an inch wide for the body of the insect, and a lower one about the same width to receive a strip of sheet cork; before putting in the cork, however, several holes should be made along the centre of the groove, just large enough for the size of the pin used. The wings of the insect are held in place by winding many times with tread. Both boards slope a little towards the centre.

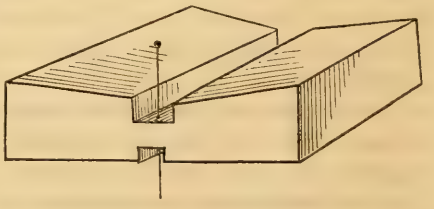


Fig. 4.

If the insects are too stiff to set, and the smaller species are liable to dry in long excursions, they can be relaxed by placing them for a few hours between damp sheets of blotting paper, or in a box of damp sand. They should remain in the setting board from one to two weeks. The bodies of very large moths should be opened on the underside and everything taken out, after which fill the cavity with cotton and sew it up.

As soon as the specimens are perfectly dry, they are ready for the cabinet or for framing. Nothing more can be done to preserve them, except to keep the cases *perfectly tight*, to keep out both dust and insects, as there is a small beetle whose larva will destroy a collection in a very few weeks if allowed an entrance. It may be well to keep a small piece of camphor gum in an obscure corner, as an additional preventive. It must likewise be remembered that strong light soon fades the bright colors on the wings of butterflies, and renders them anything but objects of beauty.

To Kill Cabbage Worms.

We have recently seen a remedy for the cabbage worm, *Pieris rapæ*, (credited to the *Utica Herald*,) which seems to us worthy of trial, though (we should suggest) on but few cabbages to begin with. The writer says:

"The fluid I have used for killing the worms, and with much effect, saving my cabbages, is simply rain water heated to 130° F., with a small handful of salt to every gallon of water; pour on while you can count twelve rapidly, then stop, and if the worms are not swept down 'pell mell' out of the cabbage, repeat the operation; wash out the cabbage often with water slightly salted and heated to only 120°. But 130° is the lowest temperature at which water will kill the worms, and also the highest degree that can be safely used, and that only as above described. It is impossible to hit or kill all the worms in a cabbage at one time, especially when the heads have begun to form, but they can be routed and killed with salt water, thus heated and applied far better than with any of the powders yet proposed."

Will some of our "Rural" readers make a trial of the above on the southern cabbage worms and report success?

Bees and Practical Bee-Keeping.

Requisites for Successful Bee-Keeping.

In reply to an inquiry made in the Rural Carolinian as to whether bee-keeping in the low country can be made profitable, I will say, that it can be made to pay in any country where all the essentials and conditions necessary to the prosperity of the hive can be maintained.

In the first place, the bee-keeper must have a taste for the business, and a thorough knowledge of all the laws governing the bee; second, the hive must be of such construction that it is in harmony with the instincts of the bee, and must have movable frames of some sort, so that each comb can be removed at will; third, the colony must be strong, with sufficient workers on hand *at the time* of the honey harvest, otherwise the season will pass, and they can lay up no stores for themselves nor surplus for their owner; fourth, abundant pasturage; and fifth, favorable weather.

The most important consideration with the party commencing bee-keeping is pasturage. There are very few places that are entirely deficient in honey-yielding plants, but some sections contain them much more abundantly than others.

Bees do not "gather honey from every opening flower" as many suppose. Many flowers are deficient in "luscious sweets;" others deposit the sacharine matter beyond the reach of the proboscis of the honey-bee. The seasons also influence the yield of honey. Some flowers that are rich in sweets one year may be deficient in them the next.

Fruit blossoms are about the first honey pasture bees have in spring, though it is seldom they gather any surplus from it beyond what is used for breeding purposes.

The flowers of the black-gum are very rich in honey, and where it is abundant large surplus is laid up. The tulip tree, or poplar (*Liriodendron,*) is said to be one of the greatest honey producing trees in the world.

The varnish tree (*Sterculia platanifolia*) affords most excellent pasturage for at least three weeks. This tree is very ornamental, gives a fine shade, a rapid grower; and should always be planted in place of those that are worthless for honey. The willow, maple and holly yield some honey. The button bush, a shrub that grows along our creeks and rivers, and blooms in July and August, is rich in honey, and affords a fine harvest for the little busy workers that swarm upon it from morning till night.

In some seasons the golden rod (*Solidago,*) which blooms in September and part of October, produces much honey, and from it alone the bees have gathered their winter stores.

Many honey plants can be easily cultivated. Catnip is one of the most valuable. It commences to bloom early in the summer and continues till fall. It can be planted in many "nooks and corners on the farm where other crops can not well be cultivated. Rosemary, sweet-mignonnette, mustard and turnips (particularly the rutabaga variety) yield honey. White clover, one of the finest honey plants, can be raised on soil sufficiently rich and not too sandy. Buckwheat grows well in middle Georgia when sown the middle of August or first of September. In some seasons it yields immense quantities of honey, while in others it does not produce any. Many other plants might be named that yield honey. It is very important for every bee-keeper to take notes of all the honey plants in his immediate neighborhood. Observe when they commence to bloom; its duration; and their approximate value as honey plants may be ascertained by keeping the hive on a pair of spring scales, and noting its daily weight.

According to the Agricultural Report of 1868, the number of hives in the United States was estimated to be 3,000,000; the average yield per hive, 23 pounds, making 69,000,000 pounds of honey. This at 20 cents per pound would amount to *thirteen million and eight hundred thousand dollars.* These figures are sufficient to show that apiculture, as a branch of industry, is becoming of great importance. At some future time I may speak of the laws that govern the economy of the hive, and consider the general management of the apiary.

Augusta, Ga. J. P. H. BROWN.

MIGNONETTE FOR BEES.—If we take the instinct of the bee as a guide—and who is entitled to be a better judge?—the three, and the only valuable sources of honey to the honey-bee, are the apple-tree, white clover, and mignonette blossoms. To apiarians who have never cultivated the latter, I would advise them to sow some of the seed, for it comes in bloom when there is a scarcity of other plants for the bees, and I think its value cannot be over-estimated.

I am, this season, growing Alsike or Swedish clover, but I do not expect it will equal the white in capacity for honey. G. R. D.

Mining and the Mechanic Arts.

The Manufacture of Commercial Fertilizers.

Previous to the formation of the Sulphuric Acid and Superphosphate Company, it was maintained that the manufacture of Sulphuric Acid was impracticable in the latitude of Charleston, S. C.; but the projectors of this Company, appreciating the great advantage of manufacturing the acid near to the raw material, and seeing no scientific reason why it could not be done, applied for a charter under the above name on May 26th, 1868.

In selecting a site for their works the greatest pains were taken, and the most advantageous locations in South Carolina and the adjoining States were carefully considered. After mature deliberation, a point on the east of Charleston Neck, about four miles from the city, and lying on "Town Creek," a branch of Cooper River, was selected. This spot was where the "John Adams," the first frigate of the United States, was built, and where subsequently was the Confederate Navy shipyard. The Creek is bold and deep, affording excellent harborage, and of depth sufficient to allow any ship to come to the Company's wharf which can cross Charleston Bar.

At this spot, on the 21st of August, 1868, work was begun; and on December the 8th, of the same year, the first Sulphuric Acid was manufactured south of Baltimore.

The manufacture of fertilizers is by no means so easy a thing as some suppose, and the difficulties increase as the grade rises, in more than a geometrical ratio. This Company started out with the determination to make the highest grade of Soluble Phosphoric Acid possible from the South Carolina Phosphates; and after meeting and surmounting innumerable obstacles, both seen and unforeseen, turned out the highest grade fertilizer ever manufactured in America. The good done the country by this action is incalculable, for since that time the grade of all fertilizers manufactured in the United States has steadily improved, and to-day the farmers and planters of America have offered them commercial fertilizers not excelled by any made either in England or on the Continent.

The process of manufacture may be divided into four heads:

1st. The Manufacture of Sulphuric Acid.

2d. The Drying and Grinding of the Rock.

3d. The Mixing.

4th. The Disintegrating and Screening.

The Manufacture of Sulphuric Acid:

Sulphuric Acid is a solid dissolved in a variable quantity of water, and consists of sulphur and oxygen, so that the object in the manufacture of Sulphuric Acid is to make the oxygen of the atmosphere combine with sulphur in the presence of sufficient water to give it the required strength.

If sulphur be burnt in the open air, it combines with two-thirds of the oxygen

necessary to make Sulphuric Acid, and is called Sulphurous Acid; the last third can not be made to combine directly from the atmosphere, and so means have been devised by which it may be made to do so indirectly; these are the introduction of Nitric Acid vapor into a mixture of Sulphurous Acid and atmospheric air and steam; the Nitric Acid parts with some of its oxygen to the Sulphurous Acid, which, becoming Sulphuric Acid, dissolves in the steam and falls as a rain, while the Nitric Acid takes back from the atmosphere the oxygen which it had lost, to give it again to another portion of Sulphurous Acid, thus acting as a carrier of oxygen between the two.

All these conditions are ensured in the construction and management of the Sulphuric Acid "chambers," as they are called. These chambers are vast rooms, whose sides, top and bottom, are composed of sheet lead, and all along on the outside run steam pipes for the admission of steam into the interior; anterior to the chambers is the furnace in which the sulphur is burnt and the Nitric Acid evolved.

This Company has two sets of chambers, of an aggregate capacity of 180,000 cubic feet, and their consumption of sulphur per day of twenty-four hours is 7,200 lbs. The set last erected contains the largest single chamber in the United States, having the following dimensions: 140 feet x 30 x 25; while the furnace of cast-iron is the only one in America, and the largest in the world. They have also attached to their chambers the condensers of Gay Lussac, thus reducing their consumption of Nitre from 10 per cent. to 4 per cent., and their production is from 280 to 285 lbs. of Monohydrated Sulphuric Acid to the hundred pounds of sulphur consumed.

Drying and Grinding.—The rock, as it comes from the washers of the miners, is loaded on sloops, schooners and flats, and transported to the wharf of the Company, where it is discharged by a derrick, which is driven by a wire rope 320 feet from the engines. A shed 200 feet long, paved with brick and supported by iron pillars, extends backwards from the wharf. On this brick pavement is laid two rows of pine wood; overhead is a railroad, on which run the cars into which the rock is discharged, and from which it is dumped upon the wood beneath. When the cargo has been thus discharged, the wood is set fire to and the "kiln" burns and is dried; by the well considered arrangements of this Company, the consumption of wood is reduced to one cord of wood to forty tons of rock, thus obviating some of the damage done by too much heat, while the rock is still thoroughly dried.

The dried rock is loaded into cars, which are then hoisted up an inclined plane into the mill, and dumped by the crushers. These are three in number, made of iron, by Baugh & Sons, of Philadelphia, and are mounted on heavy frames, independent of the mill building; they are driven by belts from the main shaft, and run at a speed of 450 revolutions per minute; a man feeds these crushers with the dried rock, which passing through crushed, is picked up by elevators and delivered into the hoppers of the mill-stones.

Of these mill-stones there are six pair; they are of the best French buhr stone, and are driven by the crank shaft of one engine; they are four feet in diameter and make 170 revolutions per minute. The amount ground depends entirely upon the degree of fineness to which it is ground; in this mill the rock is ground so that

all will pass through a screen of 80 wires to the inch, and the product is about 3 tons per pair of stones per day of 10 hours. After passing through the stones the powdered rock is received into elevators which deliver it into a box through which it is screwed from the mill house into the mixing house at an elevation of about 30 feet, and there is delivered, not having been touched by hand since it was fed as crude rock to the crusher.

The mixing is done in a tub of cast iron 8 feet in diameter, which revolves 20 times per minute, and in which are small ploughs which revolve 160 times per minute. Into this tub a weighed quantity of the powdered rock is thrown by simply overturning a large scoop, which hangs from a steelyard, the scoop and steelyard being suspended from a frame which runs on a trainway from the pile of ground rock to the mixing tub; a known weight of acid is now run in and the revolving ploughs thoroughly incorporate the phosphate and the acid. When a certain time has passed, an iron plug, which stops up a hole in the centre of the tub, is raised and the mixed mass, either in a semi-fluid or a dry condition, depending on the amount of acid added, falls through into a space below. The amount of acid which is mixed with the phosphate depends upon the grade of solubility desired, the higher the percentage of Soluble Phosphoric Acid wanted the larger the amount of acid to be added, and here is the chief difficulty in the manufacture, for the higher the grade the more pasty is the mass and, therefore, the more difficult is the after manipulation; up to 5 per cent. of Soluble Phosphoric Acid the mass comes from the mixing tub dry, and can be screened at once and packed in sacks; but when enough acid is added to render 11, 12 and 13 per cent. soluble, the mass comes from the mixing tub a semi-fluid and will flow like mud 30 or 40 feet, and must be left for a time varying from two weeks to two months to harden before it can be handled; the intermediate grades also of 6, 7 and 8 per cent., when left, harden into a rock as solid as limestone and have to be disintegrated in a powerful machine. These difficulties have all been overcome by this Company, and they are now able to ship 13 per cent. of Soluble Phosphoric Acid in three days from the time of the order; this is called by them the Etiwan Dissolved Bone; they also manufacture an ammoniated fertilizer called the Etiwan by adding to the mass in the mixing tub the proper quantities of Peruvian Guano, Ammoniacal Matter and German Potash Salts; they also employ a Chemist to analyze all material received, prescribe all formulas, and to analyze the fertilizers when ready for market; every ingredient is most carefully weighed and the results scientifically scrutinized. Their laboratory is among the most complete in the South, and as a fertilizer company they rank among the foremost in the world.

The disintegrating and screening is the last process in the manufacture; the mass from the mixing tub, after standing for a time, is mined out and loaded in cars, which are elevated to a machine called a disintegrator; of these there are two—one imported from England, and the other made in Baltimore; this machine consists of two wheels, one within the other, and revolving vertically in opposite directions. The stuff is fed in at the centre, dashed to pieces by the bars at the periphery, and falling through these is received in a revolving screen, after passing through which it is ready for market.

The power for driving all this machinery consists of two engines of 80 and 100 horse power respectively, the former being made in Connecticut and the latter in Charleston. There is a set of boilers for each engine, and also another single one to generate steam for the chambers; but the steam pipes are so arranged that any engine can be run from any boiler. Of donkey water pumps there are three: one small one to supply the boilers; one of 450 gallons a minute capacity, which supplies a tank 65 feet high, from which water pipes are distributed all over the works; and one of 1,200 gallons a minute capacity for fire insurance. There is also a donkey air pump which pumps air into a boiler in which it is restrained under a pressure of 50 pounds to the square inch, and from which it is drawn for the purpose of forcing the acid up to the mixing tub and condensing towers. There, are also, five heaters through which passes the escape steam from the engines and which heats the feed water to 200° Fahr., thus saving much fuel.

The Works are also connected with the South Carolina and Northeastern Railroads by a track laid down by the Company, so that they ship directly from their Works to any point in the interior.

To the east of the Works, on a point commanding a most beautiful view of the harbor and sea, are four dwelling houses, in which live the families of seven of the white employees of the Company, including the Superintendent, Engineer and sulpher burners, so that at all times the property of the Company is protected by the presence of a large number of intelligent and efficient men; the roofing of the different buildings covers an acre and a half of ground, and the total horse-power of all the engines is 320.

The only dangerous material used is the Nitrate of Soda, which is the source of the Nitric Acid, used in the chambers; and this is stored in a fire-proof brick magazine.

The capacity of these Works, for the high grade which they make, in 850 tons per month of the Etiwan Dissolved Bone, and 1,000 tons per month of their ammoniated fertilizer, the Etiwan. During busy seasons, which, in this business, is the winter, about 120 hands are employed, and the weekly pay roll averages about $800; thus spreading a large amount of money among the laboring classes and materially benefitting the community.

I would only add that in view of the great need of manufacturing industry in the South, and of the necessity of fostering such enterprise, the taxes upon this business should be suspended now at the time of the great competition with the North. Very respectfully,

W. W. MEMMINGER, M. D.

Palmetto Paper.—Mr. Henry Banks, of Atlanta, has, for the past two or three years, been experimenting upon palmetto and wire-grass for making paper. Last August he shipped 8,000 pounds to a paper mill in Philadelphia, and went there himself and witnessed the whole process of converting palmetto leaves into paper, which proved a greater success than his most sanguine hopes had anticipated. Mr. Banks is organizing a stock company to introduce the manufacture of this paper into Georgia.

Applied Chemistry and Mineralogy.

All communications and notes of inquiry intended for this Department, as well as specimens of soils, fertilizers and minerals for analysis or description, should be addressed to Charles U. Shepard, Jr., M. D., No. 20 Broad street, Charleston, S. C.

On some Foreign Phosphatic Deposits.

The readers of the Rural Carolinian may find interesting the following notes on some foreign deposits of guano and phosphate of lime, to which attention has been drawn during the past few years. These notes indicate the zeal with which such deposits are investigated, and, thus, afford an index of their appreciation in other lands. Moreover, they contain for those engaged in mining the South Carolina rock, some hints as to the competition which must meet their products in the English market. Very possibly the following statements are more or less biased by local interests; how much so we can not venture to predict. It will be seen that no reference is made to the coprolitic deposits of England and Belgium, nor to the mines of Apatite, in Spain; nor again to the W. I. and Pacific Guano Islands, (the Ballestas excepted,) since there have been few new developments concerning them. The prices mentioned are in American gold.

*I.—The great Russian Phosphatic Deposit.**

Concerning this extensive and valuable deposit we possess interesting details from M. Yermoloff, assistant to Prof. Engelhardt, of St. Petersburg, under whose direction the recent geological and economic survey has been made. It appears that the presence of an irregularly formed and dark brown stone was noted during the geological survey of Central Russia, in the earlier part of this century, and that the scientific men attached to the expedition, including Prof. Sir. R. Murchison, failed to discover its character and origin, considering it to be, simply, a ferruginous mineral. The deposits in the neighborhood of the cities of Koursk and Veroneje excited careful study; but they served no other practical use than that of building and paving material. The discovery that these stones were largely composed of phosphate of lime and magnesia is due to Prof. Chodnef, of St. Petersburg. The recent survey by Prof. Engelhardt was instituted by the Russian Government in 1866, and it has succeeded in establishing the knowledge now possessed, in regard to the extent and value of these phosphatic beds.

The rock in question, (which bears the name of "samorod," natural stone, in Russia,) is found more generally in the strata of the Cretaceous formation; but it is not confined to them, occurring also in those of the Jurassic, Tertiary, and even the Silurian. "In the Cretaceous, the phosphate appears more frequently as a deposit underlying the white chalk, sometimes it is discovered under the green sand, embedded in a mass of greenish sand; the latter containing a quantity of green grains of the silicate of the protoxide of iron, known as glauconite." Elsewhere, the phosphatic deposit crops out on the surface of the earth, being disseminated in the form of nodules through the cultivated soil. The Cretaceous formation constitutes in central European Russia a kind of basin, the northern boundary of which only has been explored; and the richest and most accessible phosphatic deposits occur where the above formation gives place to those of the Jurassic and Devonian.

The area of this deposit between the Dnieper and Volga Rivers, is estimated at about fifty million acres, and there are still others, already discovered, of greater or less abundance. M. Y. remarks: "We do not think that we exaggerate when we say that Central Russia reposes

* Les Phosphates de Chaux de la Russie, Alexis Yermoloff, St. Petersburg. Journal d'Agriculture Pratique No. 19, 1872.

on phosphate of lime, with which she is able to pave the half of Europe; and thus are these beds which she contains, of inexhaustible wealth."

The central deposit begins in the Government of Smolensk, (W. of Moscow,) and extends without any serious interruption, in a S. E. direction, to that of Veroneje, a distance of not less than 370 miles; having a width of 60 to 125 miles. In the southern part of this belt, the bed of phosphates lies at a depth inaccessible to exploration, but it reappears on the southern margin of the Cretaceous basin, as explorations have shown. To the north of Veroneje the bed of phosphate disappears; yet, 125 miles northwards, in the neighborhood of Tambof and Spask, it reappears, and stretches even beyond the Volga. Other deposits, at present but slightly explored, have been found in the Cretaceous and Jurassic formations of the Governments of Moscow and Nijni-Novgorod; and, still later, in the neighborhood of Grodno, (in Western Russia, on the border of Poland.) Prof. Shwakhoefer, of Vienna, has verified the existence of phosphate of lime in the schist of the Silurian formations in Podolie, on the banks of the Dniester, (S. W. Russia,) occurring there in the form of nodules. Most recent of all, the discovery of 12 p. c. phosphoric acid has been made in a calcareous stone found near Novgorod. The above description of phosphatic beds will show, especially with the aid of an atlas, the vast stretch of country underlaid with phosphates in *European* Russia. Railroads and great rivers cross this area in many directions, and they will serve to distribute the valuable material for home consumption, or transport it to the sea for foreign shipment. This discovery is all the more important for Russia, as her celebrated grain fields begin to show the effects of a highly exhaustive system of agriculture.

The phosphate of lime occurs in various forms, more frequently in that of nodules, imbedded in a gray or yellow sand, of different sizes, and ranging in color from black or brown to gray and green. Occasionally it is found in the form of schist, sometimes very compact and massive; but these masses are due to the agglomeration of large nodules, united together with a kind of cement. This is the form of phosphate which has been used as a building and paving material. The deposit consists of one or two principal strata, with from two to five less important, successive ones. The thickness of the principal stratum varies from six to twenty inches. The depths at which the beds occur is very different. At some places the phosphatic deposit crops out on the surface; at others, its depth is not less than several hundred yards from the surface.

A great number of analyses of these deposits have been made, and they show a similarity of composition for the different beds. The following analyses indicate the character of the Russian phosphate:

A. shows the maximum and minimum composition.

B. is the analysis of a specimen from Tambof.

C. is that of one from Spask.

Ingredients:	A.	B.	C.
Phosphoric Acid	*p. c.* 12. to 35.	*p. c.* 20.26*	*p. c.* 27.48†
Carbonic Acid	2. to 6.	.....	3.95
Sulphuric Acid	0.5 to 1.	0.85	1.08
Lime	18. to 50.	29.07	42.00
Magnesia	0.5 to 1.5	.....	0.40
Oxide of Iron and Alumina	1. to 3.5	3.47	3.19
Clay and Sand	9. to 50.	35.50	9.50

* Equivalent in Bone Phosphate of Lime=44.23 p. c.
† Equivalent in Bone Phosphate of Lime=59.99 p. c.

It will be noticed that analyses B. and C. approximate to analyses of respectively poorer and better varieties of South Carolina Phosphate.

With regard to the yield of the beds, it has been calculated that the beds of the central belt, (in Smolensk, Orel, Koursk and Veroneje,) contain *not less than six thousand tons per acre;* while those of Tambof, which are the most prolific and richest, are capable of *yielding twenty to thirty thousand tons per acre.* These phosphates, washed and ground, are now bringing in the Riga market about $18 per ton, while in the interior the price is much less.

GERMAN PHOSPHATES. II.—*The Lahn Phosphorite.*†

The deposits on the Lahn and Rhine are producing a valuable yield of phosphatic material in spite of the difficulty experienced in obtaining it. It occurs mostly, it is said, in pockets, and some of these have to be excavated at considerable depths. The product of these mines is of two general qualities, one comprising those masses which, when mined, are in a condition fit for sale,(so-called "piece-rock;") the other that prepared by crushing and washing, (the "wash-rock".) The stated average production at the mines is one-fifth first quality, and four-fifths second quality or wash-rock. In the year 1867 the private mining companies at Fürfurt excavated about 4500 tons, of which only one-seventh was first quality, and the remainder yielded but about 1600 tons washed-rock, fit for manufacturer's use. The loss from impurities, or the process of preparation, amounted in the above cited case to over one-half of the total excavation. In addition to these articles the mining companies sell the mixture of fine phosphate and dirt, separated by the process of cleansing; this contains from 25 to 45 p. c. bone phosphate of lime. The production of phosphate fit for manufacturer's purposes, amounted in 1869 to over 30,000 tons, valued at $150,420. The first quality containing from 60 to 77 p. c. tribasic or bone phosphate of lime, sells at the mines at about $7.00 per ton; while the dirty and inferior description sells as low as $2.00 per ton. The rock, ground and bagged, sells at Biebrich on the Rhine, for $6 to $11 per ton, according to its percentage of bone phosphate of lime. Most of the better qualities are sent to the English market, while the inferior descriptions are applied in a ground, crude condition directly to the soil, generally in conjunction with potash salts.

III.—The bed of Coprolites at Helmstedt.‡

A deposit of coprolites was discovered during 1871, at Helmstedt, in the green sand formation. This bed comes to the surface in places, although generally it is worked at a depth of 4 to 6 feet. The coprolites vary in size from that of a nut to a man's fist, and occur in a stratum 3 to 12 inches thick. Those engaged in mining this deposit pay to the land-owners about $100 per acre, and agree to preserve and replace the cultivated soil. The rock washed and ground, analyzes over forty p. c. phosphoric acid (87.3 p. c. bone phosphate.) Already over 2,000 tons have been dug.

IV.—Bat-Guano in Hungary.§

A deposit of the above guano has been recently discovered on the Danube, near Gran, in Hungary. The quantity is estimated at 5,000 tons, and its value is put at $15.00 per ton. Its composition is the following:

	p. c.
Water and organic matter	48.00
Fixed ingredients	52.00

It yields about 2.25 p. c. ammonia; and contains over 11 p. c. of phosphoric acid, in combinations soluble with difficulty.

V.—French Phosphates.‖

The existence of phosphatic nodules in the coast formation, near Havre and Calais, was made known by M. Berthier, in 1818 and 1820. After Dr. Buckland's discovery of coprolites in the Oolitic formation, the green sand, the chalk and various sedimentary rocks of England

† Lahn Phosphorite, by D. C. A Stein, Mining Inspector, Gottingen Journal der Agricultur. (1870.)
‡ Annalen der Landwirthschaft. 1872. No 85.
§ Annalen der Landwirthschaft. 1872. No 83.
‖ Dictionnaire de Chimie, Wurtz. Article on Manures, by M. Deheraln.
Les Phosphates de Chaux du Quercy.
Dr. Hector George, Journal d'Agric, prat. 1872. No. 23.

M. Nesbet succeeded in establishing their occurrence in the similar formations of France. Nodules of phosphate were found in the extreme N. E. of France, in 1854, as also in Paris itself, in 1855. Since then, M. de Molon has ascertained the existence of beds of phosphate at various localities on the border of the Jurassic formation and the green sand of the Cretaceous. These deposits stretch from the neighborhood of Havre and Fécamp, in a N. E. direction towards the Flemish borders. In the Department du Nord, nodules are frequently met with; while at Grand-Pré and other points in the Ardennes they occur on a level with the soil, and can be gathered from the surface of the fields where they are found. Phosphatic nodules are also found to the south of these points as far as the Marne; also in Savoy, and the adjacent departments. In a word, phosphatic rock has been discovered in 39 different departments of France and there is at present a great activity in the search for it.

Among the most important and recent (1865) of these discoveries is that of the phosphatic beds in the neighborhood of Quercy, and at other localities in some of the southwestern departments of France. This last named deposit is described by Dr. George as being that of the amorphous phosphorite, varying in color from whitish to yellow and red. Its surface is sometimes mammillary in character, exhibiting concentric layers of deposit; at other times it appears like some varieties of agate, being composed of successive, thin layers of phosphate. Nodules, both solid and hollow, are occasionally found. The deposits are either pockets filling irregular cavities in the limestone, or extend in elongated veins, which expand at the surface and contract below. Shells are not found in these beds, but there is an abundance of fossil bones of Vertebrates. The rock has been analyzed by M. Combes, who finds that it contains 32.60 p. c. phosphoric acid, (equivalent to 71.21 p. c. bone phosphate.) This material is, therefore, more valuable than that found in the Ardennes localities, which contains from 17 to 31 p. c. phosphoric acid,* and much more so than those occurring on the N. coast. 24,000 tons of phosphorite were excavated in France during 1867, and now the beds in the Department of the Ardennes alone yield over 30,000 tons yearly. This industry has been stimulated by the English demand for all the better qualities. About 12,000 tons were mined in S. W. France during the year after the cessation of the German-French war. This material is washed and shipped to Bordeaux, where it commands $20 per ton. Nearly all of it finds its way to the great English market.

Dr. George adds that the English have a cheap and easy method of rendering the phosphate of lime soluble. It consists in piling the rock up with pyrites and burning the mixture in the open air. This method could be used to advantage, perhaps, where the materials are plenty and the phosphate of inferior character.

VI.—Portugese Phosphates.†

Beds of apatite (phosphate of lime crystallized) have been found recently in the Province of Alemtejo, and nodules of phosphorite near the bituminous sand stone occurring at Granja, in the District of Leizia, in proximity to the ocean.

VII.—Ballestas Island Guano.‡

The Ballestas Guano as shipped to Germany and Holland by the Peruvian Government, has been repeatedly analyzed by Dr. Voelcker, of London. He reports that it is dry, of light-brown color, and of high grade, yielding over 14½ p. c. of ammonia, and containing but a very small quantity of insoluble siliceous matter. This excellent grade of guano has been brought to the attention of the agents of the Peruvian Government, in this country, and it is to be hoped that cargoes of it may be imported here. The supply is said to be sufficient to last for several years.

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* Ansted writes concerning the deposits in the N. E. of France: "They are worked at a depth of from twenty to twenty-five feet below the surface near Vouziers, but the quality is inferior, not averaging more than 20 to 25 p. c. [phosphate.] Rich specimens are found, but too few to be of much importance. The nodules are sometimes very large." Practical Geology. 1865.

† Dictionnaire de Chimie, Wurtz; Engrais, Deherain.

‡ Dr. Aug. Voelcker, in Report to the Royal Agricultural Society of England. 1871.

The Statement of Analyses of Fertilizers.

The writer has read with interest the report of the State Inspector of Phosphates,* and thinks it but proper to state, in a professional manner, some differences of opinion as to some of the chemical points. Until the millennium, men will necessarily differ in their views; and very luckily so, since on their attrition all true progress depends.

While all chemists are agreed that the determination of the different states of phosphoric acid, (soluble, insoluble, &c.,) potash, magnesia and nitrogen, respectively ammonia, contained in a fertilizer, are of paramount importance; yet, the eminent authorities in agricultural and analytical chemistry appear to give great weight to the amounts of certain other ingredients. These last are the loss at 212° F., (moisture;) loss at red heat (organic matter, &c.;) the amount of lime and the matter insoluble in mineral acids, (sand, &c.†) The reason why these ingredients should be determined, and the results given in the analytical statement which is to guide the planter in his purchase, is quite apparent on a little consideration. The amount of moisture varies very considerably; some articles containing only a few percentum, while in others it reaches over 25 per cent., or ¼ of the weight of the whole fertilizer. The quantity of insoluble siliceous matter is likewise subject to great variations, ranging from less than 1 per cent. to over 15 per cent., and even higher. These ingredients although necessarily present to some extent in most fertilizers, are perfectly valueless; and inasmuch as the planter pays for them in the price of the fertilizer, he should be made aware, by a direct statement, how much this loss amounts to. It may be urged that the greater the amount of these valueless articles, the less will be that of the valuable ingredients; and that a determination of the phosphoric acid, sulphuric acid, ammonia, potash and magnesia will give a quick and true valuation of the article under examination. But while the first part of the proposition is evident, the truth of the last may be called into question. A slight experience with commercial manures will show that with the same amount of the last named ingredients, two articles may have a different value, according as the one may contain a large amount of the valueless components, (sand, moisture, &c.,) while the other may be exceedingly rich in organic matter, lime, &c., ingredients of considerable value.

The amount of nitrogen, respectively of ammonia, is no criterion for the amount of organic matter in a commercial fertilizer, since the amount of non-nitrogenous organic matter is thereby ignored; and, as is well known, there exists a wide variation in the amount of nitrogen contained in the various descriptions of nitrogenous matter. Great weight has been attached during the last few years to the action of organic matter, as well in the soil as in fertilizers; and it appears that not only is the assimilation of the available plant-food thereby hastened, but that the non-available is rendered useful by the action and decomposition of, especially, this

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* Report of Dr. O. A. Moses, Inspector of Phosphates. Charleston daily papers, December 4th, 1872.

† Fresenius Quantitative Analyse, §269 and 271. Emil Wolff, Anleitung zur chem., Untersuchungen u. s. w., pp. 114, 116, 118. M. P.—P. Dehérain, in Wurtz' Dictionnaire de Chimie, article on manures. Dr. Aug. Voelcker's Chemical Reports to the Royal Agricultural Society of England.

form of organic matter. (Liebig ascribes the quick action of Peruvian Guano to the solution of its phosphate of lime by the action of *oxalic acid, a non-nitrogenous organic acid;* Naturgesetze des Feldbanes, S. 267.) Hence it appears reasonable to demand a statement of the total amount of organic matter contained in a fertilizer.* Again, the amount of lime should be determined; since not only is this an ingredient of value, but as the phosphatic minerals which form the basis of most fertilizers, vary so greatly in their amount of calcareous matter, (some being largely phosphates of alumina and oxide of iron,) it becomes an important item in the valuation of the complete manure.

In the purchase of a fertilizer the planter pays *for the whole article;* for all the ingredients, good, bad and indifferent. If he paid (as he does not in this country) a certain price *per unit* for the phosphoric acid, ammonia, etc., he would be able to calculate the cost of these few ingredients. But where the article is very composite it is simply impossible to calculate how much he may pay for the different ingredients, except as a whole, since there is no criterion to establish their relative value in money. What a planter pays for a commercial manure is by no means synonymous with its *agricultural value to him*, since it may be greater or less. Its value as a fertilizer, *i. e.* as a means of acquiring greater crop returns, can be based only on actual field experiments. The chemical analysis may inform the planter what he is buying, and experience may indicate values to the amounts of the different ingredients, but these values are wholly independent of what he may pay for the commercial manure.

With regard to the use of the term "decomposed," as applied to the bone phosphate of lime, calculated from the amount of phosphoric acid which is soluble in water and neutral citrate of ammonia, it seems hardly clear how it can apply to that minutely divided phosphate which, so far as we can ascertain, does not differ *chemically* from the coarser, crude material, although its finer mechanical subdivision admits of its easier solution. In the use of terms there will always remain a diversity of opinion, and especially where, as in this case, there appears to be no concise and correct chemical definition for the two species of phosphate. It seems agreed that what is not soluble in the re-agents above mentioned is, at the time of the investigation at least, inoperative. Subsequently this unavailable phosphate may be rendered assimilable to the plant by artificial or natural processes.†

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* The *organic matter* as determined in the writer's laboratory is the loss at a low red heat minus the sum of the moisture, the amount of sulphuric acid driven off during ignition, and the water of combination.

† The Inspector of Phosphates makes use of the term "phosphate of lime," apparently to designate all that which "has not been acted upon," etc. Unless the latter clause be appended to the term as used on his tags, there is certainly a possibility of error and confusion; since it is pertinent to ask whether, or not, the latter phosphate does include the previously mentioned "decomposed" phosphate.

The writer has adopted, in his statement of analytical results, the terms available and unavailable, as applied to the phosphate. Under available phosphate, is understood the chemical equivalent in bone phosphate of lime of the following descriptions of phosphoric acid: 1. That actually soluble in cold, pure water. 2. That phosphoric acid which, from reason of its minute mechanical, or its favorable chemical condition, is soluble in those re-agents which are supposed to most approximate to the natural solvents of the soil. 3. That phosphoric acid, which, having once been rendered soluble by the action of acids, has become insoluble in consequence of chemical reactions in the fertilizer. All the rest of the phosphoric acid is, at the time, unavailable and undecomposed.

But it would, certainly, have been a favor to fellow-chemists, if the Inspector of Phosphates had given some account of the method adopted by him in determining the "decomposed" phosphate; since, as the law compels manufacturers to submit their products to his analysis, it becomes his duty to verify or disapprove of the analytical work of others. Without a knowledge of the course pursued in the important steps of an analysis, it is impossible to compare correctly the results obtained by two investigating chemists, and, therefore, it is to be hoped that the Inspector will publish the methods employed in obtaining his results. S.

Laboratory for Analytical Chemistry, 20 Broad street, Charleston, S. C.

P. S.—Since placing the foregoing in the hands of the printer, the writer has received from Dr. Moses his views in regard to the "decomposed phosphates." Dr. M. sees fit temporarily, *i. e.* until he has perfected a new process of his own, to acquiesce in the method recommended by Fresenius and others, (referred to in the writer's article in the RURAL CAROLINIAN, May, 1872;) and to use it for the determination of the "reduced" phosphate in the case of superphosphates; but he does not admit of its application to "so-called fertilizers." It is to be presumed that the ordinary ammoniated superphosphates are indicated by the latter term. It is impossible at present, and more especially until the publication of Dr. Moses' views, to enter into a discussion on this point. For some of the writer's opinions on this subject, see the article previously mentioned, in May, 1872. But the writer feels obliged to protest against the restriction to superphosphates of the method for determining the "reduced" phosphate, as also against the *double meaning* which the term "decomposed phosphate" thereby obtains. If the Inspector of Phosphates understands by the term "decomposed phosphate," not "only that soluble in water, but the sum total of the hypothetical (calculated) tribasic phosphate, which is equivalent to the phosphoric acid originally set free from its original combination by the sulphuric acid," it seems impossible to vindicate the restriction of this term in the analysis of fertilizers, to that only which is soluble in water at the time of the investigation. If the term, as applied to superphosphates, embraces the phosphoric acid soluble in water *and* neutral citrate of ammonia, (as used by Fresenius,) *with what justice can it be confined to only that which is soluble in water in the case of fertilizers?* Since the latter contain as frequently as the former, a considerable amount of phosphoric acid in combinations, soluble in citrate of ammonia, though insoluble in water.

Would it not, therefore, be more *in accordance with fact* if, in his statement of analyses of "fertilizers," (ammoniated superphosphates,) the Inspector of Phosphates should use some other term than "decomposed phosphate" for the tribasic phosphate of lime, which is equivalent to the phosphoric acid soluble in water only. *Otherwise, the application of the term becomes illusory, and does an injustice to the great majority of the fertilizers made, and sold in this market.* S.

PLASTER AND ALUM CEMENT.—Plaster of Paris mixed with water and a cold solution of alum, is an excellent cement for stone-ware. It sets slowly, but becomes as hard as stone.

PATRONS OF HUSBANDRY AND AGRICULTURAL SOCIETIES.

A Few Words of Caution to Patrons.

We are glad to learn that our State Deputies are not idle, and that many new Granges have been organized since our list was published in the November number of the RURAL CAROLINIAN; but just here, perhaps, a word of caution may not be out of place. It is very desirable that all our Granges be sufficiently strong for efficient work. We must not multiply them too much. Where there are only sufficient numbers of suitable persons to form two good Granges it would be bad policy to organize three or four weak ones. In general, in our sparsely settled country, a Grange may embrace all the eligible persons within a circuit of five or six miles from the place of meeting.

On another point, we beg leave to urge the importance of a prudent and cautious policy. We must not allow an anxiety to increase our numbers, to swerve us from the strictest adherence to the high moral standard of the Order. If we desire to make membership in a Grange an honor to be sought and labored for, and a sure guarantee of integrity, fidelity and general rectitude, we must rigidly exclude all improper persons. Let the gates be forever closed on the untrustworthy, the idle and the vicious.

New Granges in South Carolina.

COKESBURY, DEC. 7TH, 1872.

Dear Sir and Bro.—I have received notice of the formation of the following Granges since the publication of your list in the RURAL CAROLINIAN of November:

Name of Grange.	*P. O. of Secretary.*	*Master.*	*Secretary.*	*Date of Organization.*
Mechanicsville,	Mechanicsville,	T. H. Dick,	E. H. Holman,	October 30.
Bishopville,	Bishopville,	J. W. Stucky,	Chas. Spencer,	October 30.
Summerton,	Wright's Bluff,	H. L. Benbow,	R. K. Rutledge,	November 1.
Clarendon,	Manning,	W. R. Crosky,	Jas. E. Davis,	November 1.
Manning,	Manning,	B. P. Barron,	W. J. Clark,	November 1.
Calvary,	Manchester,	Jno. H. Furman,	W. S. Manning,	November 2.
Cane Creek,	Santue,	F. Hobson,	P. P. Butler,	November 8.
Santue,	Santue,	James Thomas,	D. A. Thomas,	November 8.
Crosskeys,	Crosskeys,	D. H. Sheldon,	W. H. Norman,	November 15.
Cawcaw,	Orangeburg,	T. J. P. Walsh,	O. B. Riley,	November 16.
Fullerton,	Sumter,	P. P. Gaillard,	H. G. McLeod,	November 27.
Ridgeway,	Ridgeway,	J. B. Boyd,	J. Q. Davis,	November 27.

D. WYATT AIKEN,
Sec. of State Grange.

The National Grange, Patrons of Husbandry, of the United States will meet in Washington, on Wednesday, January 8th. A full attendance of Masters and Past Masters of State Granges and General Deputies of the National Grange is earnestly requested.

Deputies of the State Grange of South Carolina.

For Abbeville, F. A. Connor,
" Anderson, J. A. Hoyt,
" Barnwell, J. W. Ogilvie,
" Beaufort and Colleton, L. A. Harper,
" Charleston, A. B. Rose,
" Chester, Julius Mills,
" Chesterfield, S. G. Godfrey,
" Clarendon and Sumter, J. S. Richardson,
" Darlington, E. R. McIver,
" Edgefield, D. C. Tompkins,
" Fairfield, T. W. Woodward,
" Georgetown, Ben Allston,
" Greenville, C. N. Donaldson,
For Horry and Marlboro', T. E. Dudley,
" Kershaw, Wm. N. Shannon,
" Lancaster, J. H. W. Stevens,
" Laurens, Wm. Anderson,
" Lexington, Wm. L. Shuler,
" Marion, C. D. Evans,
" Newberry, Frank Moore,
" Oconee and Pickens, D. Wyatt Aiken,
" Orangeburg, W. F. Barton,
" Richland, C. O. Marshall,
" Spartanburg, J. H. Evins,
" Union, C. D. Peake,
" York, E. M. Law.

State Deputies—A Correction.

BRO. JACQUES: On p. 149 of December number of RURAL CAROLINIAN, you say "the State Grange furnishes its Deputies with blanks, etc., to organize Subordinate Granges." The Secretaries of State Granges inform me of the appointment of Deputies, but the blanks and instructions are sent out direct from my office to the Deputies. This secures uniformity and we know here if the person organizing is duly authorized. Fraternally, O. H. KELLEY, *Sec'y of National Grange.*

Southern Deputies of the National Grange.

D. H. Jacques, General Deputy for the State of South Carolina, Charleston, S. C.

E. G. Wall, General Deputy for the States of Mississippi, Alabama, and Louisiana, Jackson, Miss.

D. Wyatt Aiken, Deputy at Large for the Southern States, Cokesbury, S. C.

The State Grange, Patrons of Husbandry, of South Carolina, will meet in Columbia, on Wednesday, January 15th, at 10 o'clock, A. M., in the Hall of the State Agricultural Society, in the Fair Grounds. It is important that there be a full attendance, as much business of great importance will come before the meeting. The Degree of POMONA will, we understand, be conferred on all who are entitled to it, including all Masters and Past Masters.

In Nebraska, corn hauled twenty miles to market brings ten cents a bushel. Wood is scarce and coal beyond the reach of most persons, and many are using corn as fuel. The East and the South want this corn and would pay a good price for it. The reason they can't get it is the enormous and exorbitant rates of transportation—fifty five cents per bushel from Nebraska to New York. Here is work for the Patrons of Husbandry.

Several communications for this department are unavoidably postponed. We hope to give it more space in our next.

Miscellaneous Correspondence and Notices.

Running Notes.

Editor of the Rural Carolinian: Does not Dr. J. R. Nichols (in extract in November Rural Carolinian) very much *under*-estimate the acreable amount of the South Carolina Phosphates?

I was credibly informed, sometime ago, that nine cubic feet of these rocks will weigh 3,000 lbs., and, if so, then each foot deep of acre will weigh about 5,000 to 7,000 tons, according as it is more or less free from earth, sand or gravel, consequently a bed *twelve* feet deep ought to furnish from 75,000 to 80,000 or more tons.

The Carob-tree.—The seeds of this tree were distributed from the Agricultural Department of the Patent Office, along with the acorns of the cork oak, some twelve or fifteen years ago, and I planted some of both. Both stood the climate on this plantation, (a few miles north of Beaufort,) and when, in 1862, I was compelled by the war to abandon it, the young trees of both kinds were eight to ten feet high. Immediately after the war negroes moved on the plantation, and by burning the garden every year, to keep off foxes, they destroyed every carob-tree before I could return, and only one or two weakly cork-trees survived to die a little later.

The Guava in South Carolina.—I have had a Guava plant for about twelve or fifteen years, but as I never protected during the winter, it was every year killed down; and I purchased at the same time a Banana plant, which continued to put up fresh suckers every year, until two or three years since, when it finally disappeared. One year during the war, the winter having been uncommonly mild, the next autumn I found, on a visit, one bunch of nearly full grown bananas, which I gathered to show as a curiosity, not being able to come back later when it might have ripened. C.

Notes from Maryland.

Editor of the Rural Carolinian: Our corn crop has been a most bounteous one, and thanks to propitious weather, most of it has been harvested, the fodder being in splendid order. It will be more than an average crop.

The wheat just put in looks well, and should we have a favorable season, the crop may be a good one, although it is rather early yet to give any definite estimate.

As in most other sections of our country, our fruit crops were unusually large, except that of the grape, which was not much more than an average one, although the pear, apple, peach, and berry crop, made up the deficiency, as regards yield, very nicely.

Most of our trees made a good growth, especially a large young dwarf pear orchard, set out last fall, which has made at least eighteen inches of new wood. The large standard orchard, (Bartlett's,) set out the same time, were badly winter killed, owing to being forced too much in the orchard, and to an open winter, alternate freezing and thawing being the rule.

DAVID Z. EVANS.

Chesapeake City, Md., December 3d, 1872.

Seed and Plant Exchange.

In your September number, under the head of "Seed and Plant Exchange," I noticed a communication from Mr. G. L. Crum, 226 Clay street, San Francisco, wanting some Guava Seed, and proposing, in return, to send such seed from California as might be desired here, I immediately forwarded to Mr. Crum a package of Guava Seed, requesting him to send me some seed of the Malva Tree; and as I noticed that the Editor of the RURAL CAROLINIAN expressed a wish for some of the seed, I requested Mr. Crum to forward you a package at the same time. I hope you will get them.

I have, also, learned that seed of the Malva Tree can be purchased at the seed store of E. E. Moore, 425 Washington street, San Francisco, at fifty cents per ounce.

I write to propose an exchange. I want a few plants of the President Wilder Strawberry, some plants of the Herstine Raspberry, some Tea plants or seeds, and Pyracantha cuttings, for hedging. In return, I will send the Guava, Coca, Cassava, Arrow-root, or Jamaica Ginger; this last, however, in limited quantity, and not before next February. I do not think the Guava can be made a success without a great deal of winter protection in the latitude of Charleston, but the four last named might possibly succeed with a little care.

Any one interested in the above, can address me at Lake Griffin, Fla. Packages sent to the care steamer Dictator, Charleston, or Savannah, Ga., care Hart's steamers, Palatka, Fla. A. T. ROBERTS.

Inquiries and Answers.

J. S. P., Texas. 1. We have no personal experience with the Six Oaks Cotton, etc., advertised by Mr. James V. Jones, but that gentleman's reputation as an honest and honorable man, gives us full confidence that he would not intentionally make a false statement. 2. The chufa belongs to the sedge family, and is closely related to our coco or nut-grass. It is a native of the Mediterranean region, and well suited to our climate, withstanding heat and drought to perfection. Its scientific name is *Cyperus esculentus.*

———Laurens. Some red clay lands are deficient in lime, while iron superabounds, and, perhaps, runs into an acid salt, doing harm to the roots of plants. We have seen fine apple orchards on red lands, but have heard of several failures on soils quite similar in appearance, but, probably, lacking in lime salt, of which the apple requires a large amount. Try a good dressing of lime in your orchard.

———"Horticole." Our experience with Kohl-Rabi seeds sent out by the Department of Agriculture, has been similar to yours. They have made an immense mass of leaves and very little bulb; in fact, they have almost reverted to the original cabbage, some of them making not altogether unsuccessful attempts to head. Get the early White Vienna, or the Early Purple, and you will not be disappointed.

———S. J. We have no practical experience with the "Patridge Pea." Its botanical name is *Cassia chamamœcristi.* It is said to be a very pretty plant, growing about two feet high.

———Mrs. S. S. The so-called Zante Currants are not currants, but dried grapes of a peculiar small variety, made use of exclusively for the purpose.

General Notices and Acknowledgments.

The first, to come to hand, of the regular seed catalogues for 1873, is that of the distinguished and popular James Vick, of Rochester, N. Y.—"Vick's Floral Guide,"—and it exceeds all former issues in fullness and beauty, which is saying a good deal. The frontispiece is a colored chromo of the New Japan Cockscomb—a magnificent plant. The Guide is now published Quarterly. 25 cents pays for the year, four numbers, which is not half the cost. Those who afterwards send money to the amount of One Dollar or more for Seeds may also order twenty-five cents worth extra—the price paid for the Guide.

The Live Stock Journal, published in Buffalo, N. Y., by Haas & Kelly at $2 a year is one of the best periodicals of the kind in this or any other country, and as we have no Southern stock journal, our stock breeders and stock keepers (and we are all interested in stock to a greater or less extent) can not do better than to take this well conducted, trustworthy and liberal monthly.

Thanks for a package of flower seeds from Peter Henderson & Co., 35 Courtland street, New York. Coming from such a source, we know they will prove good and true to name and that it will be our own fault if they do not give us, in due time, each variety in its way, perfection of bloom and beauty.

We are again compelled, for lack of space, to postpone several communications intended for this number, and to condense others. We trust our valued contributors will have patience with us. We shall give them all a hearing at as early a day as possible.

We acknowledge with many thanks the reception of a package of fine strawberry plants, grape cuttings, &c., from Dr. J. P. H. Brown, Augusta, Ga. We shall give the new varieties a fair trial and report results.

What Parvin's Steam Motor is Like.—Mr. Dunlap describes this engine as follows:

Imagine, if you please, a locomotive moving over a twenty-foot section of rail, and some Titanic power dropping a section of rail in front and taking up one in the rear, as the engine moves forward, and you have an idea how this new farm engine is to be propelled. It can be seen how this engine is to pass over soft meadows, through prairie sloughs, and over ploughed land, and yet be able to have heavy loads after it. Of its capacity for work, just what it will cost to do a given amount of work, and the profit it will be to the farmer over the use of teams, are questions yet to be settled by actual trial, and I leave this part of the discussion out of sight. That it will do all the things named in a satisfactory and workmanlike manner, I have no doubt.

Literature, Science and Home Interests.

THE CAVE OF THE WINDS.

PART IV.

In a late train Morton arrived from a business tour he had been making. Branwell almost thought he seemed confused when he asked for an interview, but if his supposition was correct he soon recovered his usual nonchalance and answered Branwell's questions promptly. It was as Branwell had expected. Morton said he recognized Miss Lorillard as the woman whose marriage he had been a witness to; that he half fancied Branwell also knew, and was playing a game upon him by appearing as if he did not know her for what she was. Branwell listened with hardly a word of reply, and then left him and went to his own room. It was already midnight, and he had made arrangements, for his party was to start early in the morning, but he had no idea of sleeping. Despite all the circumstances that would have led him to think of Miss Lorillard and what she had told him, his thoughts bent themselves upon one subject—that he had loved the girl he had met here—that he was to leave her. A desire which he could not escape or conquer had taken possession of him, the wish to write to her—for once in his life to reveal to reverent eyes all his nature and history; whatever she might think of it, she would not think lightly. He was sure he was safe in her thoughts from any misunderstanding. His very soul longed to pour itself into her heart. He could expect no reply; it was not for that he wrote.

Even in the first words addressed to her he felt that consolation which one experiences when *en rapport* with one in whom belief is entire and restful.

The next morning, while yet the sun's rays were ruddy and horizontal, Branwell's party were participating in a hurried breakfast; satchels and baskets lay upon the floor, and the ladies, save Miss Lorillard, were frowsy and half asleep: she only was suave and sweet-tempered, and in perfect travelling costume. At last Branwell handed them into the waiting carriage; then he ran back and called a servant, putting a letter into his hand, and saying:

"Give it to the lady, as soon as she comes down. Do not fail."

A piece of money enforced the injunction, and without looking at the envelope the man promised, and Branwell rode off to the depot. Notwithstanding Mrs. Richmond's garralous efforts, the party that started east that morning was rather a silent one.

At the hotel when the ladies began to come down to breakfast, the waiter took the letter from his pocket and read the address, then said to himself, "The gentleman was mistaken; there is no such lady here."

He gave the letter to the landlord, who inquired for a Miss Eytinge. The dark-haired girl claimed the note, saying the address was a mistake. If the letter was left by Mr. Branwell it was probably hers, and it was forthwith delivered into her hands.

It was in her own room that she read the letter. It commenced:

"Let the feeling with which this letter is filled be my only explanation for addressing you. To offer an apology would be to admit that in thus writing one was necessary. Without preface let me tell you the story of my life." The girl read on with quickened breath, with clouding or brightening eyes. When that history was done there remained yet something to be read.

Involuntarily, though alone, she shaded her eyes with her hand as she read, and only by those humid, sweet lips could her thoughts be told.

"And now, for what I shall say, do I need to beg forgiveness? In the sight of Heaven I feel innocent, free to say once in my life all there is in my heart. I have left you, probably forever; but this once I will write to you that I love you—purely, devotedly, with all that I am. Dear one, I love you with love, and in saying that I say that it is for always. Already my life appears more endurable, for I have told one in whom I trust all that afflicts me—all the love that ennobles me.

"I shall strive to be just to the woman who claims to be my wife; if she has no longer the property I settled upon her, I shall give her a most ample annuity. My wealth I can bestow as lavishly as she can wish; that is all she can ever receive from me. My heart, or an emanation from your own, tells me that all I have written will be understood. I know that fortune, life or honor would be safe in your hands. The deep and forgetful happiness, the burning glow that has penetrated my entire being as I have written, wavers and dies into the everlasting longing that is to be mine—for I must say farewell. Am I wrong to feel that the electric chain which binds me to you can never be destroyed? Once having known you, my soul can never more be alone. Bless thee to the full extent thy heart desires. Once more, farewell.

William Branwell."

The girl's face dropped to her hands to conceal the divine light which overspread it. Her hands, clasped in her lap, throbbed with the emotion that possessed her.

Meanwhile the man was speeding eastward, silent, self-contained. Before they reached the Branwell house he had begged his aunt to consider his house her home for an indefinite period, and to invite Miss Lorillard to remain with her. Mrs. Richmond, whose means were limited, was only too glad to accept the offer, and Branwell saw them domesticated there; then he departed on a journey, concerning which he did not see fit to inform the ladies. It was a journey of investigation which he could not rest until he had made Miss Lorillard guessed very well where he was gone, but she said nothing.

It was a gloomy night when he arrived at the little seaboard town in Massachusetts. when he had last been there he could not see the place, and everything was new to him save this dismal east fog which hung over the village as it had done then. He shuddered as he felt it, though the night was warm and in September. Then he had come to his wedding; now it was to clear up the mystery of that marriage.

With the next morning's sun the dampness melted away in curves of gold; the sea gleamed with the joy of day, and Branwell walked along the beach from the tavern in the direction in which lay the minister's house. The church stood in a rocky field half a mile back, its small paned windows glittering with the universal sparkle of the morning. Perhaps Barnwell imbibed something of the peace of the time, for his face, as he knocked at the low-browed parsonage was very calm. He might have been coming on the most unimportant of errands.

"May I see the clergyman?" he asked of the woman who came to the door. The clergyman was her husband, and she immediately ushered him into a tiny study where sat a man about thirty-five.

"Is this Mr. Wrayburn?" asked Branwell.

"No, I am his successor," said the minister. "Can I do anything for you?"

"I want to find Mr. Wrayburn. If you can help me to discover him, I shall be obliged to you."

"Mr. Wrayburn has been dead several years," was the reply.

Branwell was silent a moment; it had never occurred to him that the clergyman might not be living, and he knew this was a serious misfortune. At last he said:

"Do you know a Mrs. Trask who lived in the village some five or six years ago—a widow?"

The minister did not know; he had been settled there only since Mr. Wrayburn's death; he knew of no such person now. Some older inhabitant of the town might know.

Branwell rose, knowing that this visit at least was fruitless. He thanked the man and walked back to the hotel. On the little piazza stood the landlord smoking his clay pipe and surveying the morning complacently. Apparently he was what was called an "old settler" in the place, and Branwell addressed him.

"Mrs. Trask?" he said musingly, with the pipe held between his fingers. "Yes, there was a Widow Trask who lived in the south part of the town, but she's been dead going on four years. Any relation?"

"None at all. And there was no other Widow Trask in town?"

"No, I'm pretty sure there wasn't. What is it, a law case?"

Branwell informed him that it was not, and sauntered down to the beach, across the strip of sand and on to the rocks that showed their rugged, rust-colored sides bare to the sun at this hour of low tide. Down to the edge of the water, on one of the rocks, Branwell saw a man swinging a fishing rod. Without any intention, he soon found himself by his side and entering into a desolutory conversation with him. He was a young man, younger than Branwell, and talked with intelligence and information. It being low tide fishing was not very good, and he laid his rod on the rocks, and lying back with his hands clasped under his head, gave himself up to the quiet talk.

Branwell, with his purpose always in his mind, after learning that he was a native of the town, and had always lived there, asked if he remembered a Miss Lorillard—one who taught school somewhere in the town. The man moved from his easy position and looked suddenly at his interrogator with a nervous, quick moving of the hands, and a blush spreading over his face.

Branwell's eyes shone as though he had at last reached a clue. The man turned his face away and said quietly:

"Yes, there was a Miss Lorillard here about six years ago."

"What was her name?"

"Fermor—Fermor Lorillard."

There was an indescribable something that gave Branwell the idea that this stranger had been deeply interested in the owner of that name, and the idea made it difficult for him to question him, but he finally said:

"Do you mind answering a few questions about her? I give you my word they are not asked idly."

After a little hesitation he replied:

"I am willing to tell what I know of her; it was not much, and nothing really of her life."

Branwell looked at him—at his reticent, sensitive face—and he experienced an emotion of anger as he believed Miss Lorillard allowed this man to love, possibly had coquetted with him.

"Describe to me her appearance, her face," said Branwell.

The young man lifted his head from the rock; his eyes, with a passionately wistful

look in them, were resting upon the far horizon across the water.

"Can I describe fire, light, goodness?" he said, as if speaking to himself.

"She was then so beautiful?" said Branwell.

"To me she was," he said; then continued with an unreserve Branwell had not looked for:

"Some way I do not mind speaking freely to you, sir. It is nearly six years since I saw her, and I have never spoken of her before; but I cannot forget her, though, as she told me, I should live to think of my acquaintance with her as a dream, but I did not believe that then. A boy of nineteen does not easily think his sensations will grow less intense."

"You knew her well. I beg you will give me some idea of her face," persisted Branwell, strangely interested in what the man said.

"I can tell you in so many words that the face was dark—darker than is common to Americans; that her eyes were brown; that they held all the glories of the East in them, and the attraction a thousand times more powerful, of swift intelligence, flashing intellect, and of the kindest heart. I can tell you that but perhaps not many would call her beautiful, for her face in repose was only what one would call 'rather good looking.'"

When the man had commenced speaking, Branwell had left his lounging attitude and was sitting bolt upright, half bewildered by the words he heard. Here was the first shadow of a contradiction to what Miss Lorillard had told him. Could it lead to the substance of a proof?

"Was it her home here? Where is she now?" he asked eagerly.

"I don't know where she is now," was the response. "This town is her birthplace, but she never lived here long. When very young she was adopted by a wealthy Englishman and taken away by him, I never knew where. Her parents were both dead and everybody said it was a good thing for her. I had never seen her at all until the summer she taught school here; and though I thought it strange she should teach, I learned from her words that she longed for once to know something of the New England life to which she was born—that there was inherent in her a trait which found its fulfilment in being actively useful—and I suspected that some change in her circumstances had probably brought into stronger life this characteristic."

"Did she ever marry?" asked Branwell.

"Not that I know—not while here. And I have never heard from her since she left the village."

In the silence that followed. Branwell thought that the stranger loved Fermor Lorillard—that the ideas of a lover concerning a girl's face were not to be trusted. But he could know if she were dark or light, although Branwell's surprise was so great that he was half inclined to suspect the truth of what he had said; but still he was convinced from the man's face and manner. With that ray of light streaming upon his mind, he did not at first recognize how difficult would be the attempts to identify, to prove—for did not Miss Lorillard hold in her hands all the proofs? Whatever he could gather was mere conjecture; yet he resolved it should be the labor of his life to remove the doubt he felt.

He knew it was not strange that his companion should not have heard of the marriage, particularly if Fermor had desired it should be kept quiet, and had left the place immediately after.

"When she left the town did you not know then to what place she removed?" asked Branwell.

"No; she went away very unexpectedly to me and to everybody, I believe."

"Had you never heard any rumors of a marriage?"

"Never. Is she married? Is there any mystery, any misfortune connected with her?" His questions were asked imperatively, and with an accent as if misfortune could not attack her.

"It is a question of identification," said Branwell, "and I am very grateful for what you have told me."

He sat in silence for a while beside the young man. The flood tide came and commenced the sound of the returning of its waters in among the chasms of the rocks—the rush, the retreat, the rush again. The noise interfused through Branwell's musings. It was possible, but was it probable, that there was another Fermor Lorillard who was the ward of an English gentleman, who was a native of this town?

When he returned he went to the office of the town clerk for curiosity's sake, and he found the record of the marriage of Fermor Lorillard and William Branwell, but it was not strange that the man with whom he had been talking had not examined the register, as he had never suspected any such fact.

Then Branwell made inquiries for Miss Clitheroe, the only remaining witness, but he could get no clue whatever to her. No one knew her. She had most likely been a stranger who had happend to be a witness of the ceremony.

When Branwell returned, though he had been absent hardly more than a week, he was surprised to see the increased appearance of illness in Miss Lorillard. She still seemed usual, as far as her manner and conversation went, rarely allowing any sign of illness to be visible. But she could no longer control her countenance as she used to do. Painful blushes dyed her cheeks at any surprise; then the flush was succeeded by a paleness so intense as to be startling.

It was thus she looked when she first met Branwell after his return, but she soon recovered something of her usual appearance.

They were alone in the sitting-room after dinner. Miss Lorillard was not wrong in thinking that he wished to speak with her, but she obliged him to ask for the interview.

"Stay a moment, Miss Lorillard," he said, as she rose to leave the room. She turned and resumed her seat.

"I have been to C——," he said, mentioning the town in Massachusetts.

She remained in a listening attitude, but she did not speak.

"It is but fair to tell you that my intuition, or whatever you may please to term it, refuses to allow me to believe what you have told me; I know I am repeating what I have said before, but you will pardon me. While in C—— a slight circumstance appeared to strengthen the doubts I have felt. It was not proof. You hold in your hands all the evidence as yet discovered; but it shall be the one object of my life to set at rest the unbelief which haunts me. In the mean time, in obedience to the testimony you have produced I shall supply you with whatever income is reasonable that you shall specify, as I have an impression that you no longer possess the property I settled upon my wife. But you will permit me to persist in my resolve not to acknowledge you as Mrs. Branwell for a while at least. I promise you, however, that as soon as I can rid myself of all suspicion which you know is not voluntary on my part, and believe you in truth to be my wife, then I will acknowledge you to the world, if you require that of me."

It was unspeakably repugnant to him to be obliged to speak in that way, but he felt it a duty he owed to himself and her.

She waited a little after he had spoken, and then in an even voice she said:

"You greatly misunderstand me if you think that I should not acquiesce in all you say. And not only assent, but it is my wish that you should act thus. It is my misfortune to be placed in the most humiliating position, but I cannot escape from it."

"A position from which one cannot escape is not one's choice, and cannot be humbling," said Branwell in a softer voice. Then he asked:

"Is it your pleasure that I give you a check for a certain amount? Or shall I draw it at my banker's at my first opportunity?"

Miss Lorillard was grateful, for she would have been obliged to ask for money had he not offered it to her, and it was imperative that she very soon become possessed of a large sum.

She named the amount, and he manifested no surprise.

"I confess," she said, "that I no longer retain the liberal amount, the fortune you gave me. I have been too lavish, almost prodigal, but I should have been spared this confession had it not been that one whom I deemed a worthy friend, and whom I helped pecuniarily had proved utterly false. It was this more than my prodigality that impoverished me, and I still have some debts to trouble me."

"You shall have no longer," said Branwell. "Is the sum you named sufficient for your wants?"

"Amply sufficient," with drooping eyes; "how shall I express my thanks?"

"Nay, do not attempt it," he said, approaching her chair. "I know that I must appear to you stern and even cruel perhaps. I did not know that such was my nature. I think this curious experience is revealing the evil in me more perceptibly than ever."

As he stood thus near her, he felt an emotion of pity that was painful—a desire, a wild demand that she should be truer, worthy of belief, though he could not love her.

She had covered her face with her hands, and her beautiful head was bowed, her hair rippling over her face and upon her fingers. What did she appear to him then? In all that fascinating abandon, so different from her usual manner, he could not divest himself of the impression that she was an actress of rare ability; that the skilful scheme she had arranged was successful, and he was powerless. But just then she was not acting; she had given way to the despondency she really felt, though it was policy at that moment to be true to her feelings, therefore she yielded to them. But Branwell, in whom the conviction was ineffaceable that she was false, could not be affected by anything connected with her as genuine, and though the æsthetic of his nature was appealed to—all his sense of the beautiful, as if she had been an inanimate work of art—his heart gave no response; he was cold as snow, but kind in a way that made Miss Lorillard despair.

He did not inquire what was her disposition of the money he gave her, and when she would have explained her debts to him, he declared that it was sufficient to know that she wished for the money, that he cared for no explanations. His indifference galled her into silence.

Autumn deepened into winter. Branwell had no inclination at that time to remove to his city house in Montreal; he stopped at home by the deep heaving bay, enduring until he should achieve a relief.

Meanwhile, it became evident that Miss Lorillard was seriously ill. It was often afternoon before she came down stairs, and then it was an effort, which no control could conceal, for her to ignore the weakness, the disease which had fastened upon her. In the solitude of her own room one would hardly have known her, for there the forced vivacity and appearance of health dropped from her like a garment. Her face was colorless; her eyes

had that brilliance which is the torch of illness, not the light of health.

Branwell, who saw her only when in her usual elegant dress and with that forced animation which she could assume so well, did not fully realize the seriousness of her illness; and he was surprised when, one morning in early spring, the physician, coming down from her room, said:

"Mr. Branwell, do you know if anything causes deep anxiety to Miss Lorillard?"

Branwell answered, "I believe there has been some family trouble, but I am not prepared to say what."

The physician stood thoughtfully a moment, and then said, "I have no wish to pry into her affairs; I only thought it almost certain that some mental disquietude was preying upon her. But whatever be the cause, her life has been a sacrifice. She cannot live."

Branwell listened without half comprehending. He had never thought of such an ending—life, success, seemed at the command of Miss Lorillard.

"Do you mean, to tell me that Miss Lorillard will die?" he said, comprehending at last how the knot so hard to unravel would be cut by such a blow. And yet he shrank from the physician's words when he replied:

"Yes, she cannot survive the spring. Only an indomitable will could have sustained her thus far in such an appearance of health as she has maintained."

"Is there then no chance of recovery?"

"None. It is a wasting—a consumption without the pain that so frequently accompanies it. Nothing can reinvigorate her."

Branwell, left alone in his library, paced up and down like a prisoner whose release was near. He was shocked, he was pained, but he could not receive such news with that feeling only. In vain he reproved himself that he should feel relieved at the prospect of the death of any one. Then he reflected that her death would leave him still bound, for his conviction was unalterable that she was not his wife; it left him still held to a myth, a ghost which he could never discover. Now that his wishes led him to believe that she was really his wife, he could not forget the doubts which had filled every thought when he expected her to live, to maintain her claims, and the doubts were as strong as ever.

April's airs, fickle and soft, were caressing the earth, and the sunshine grew richer every day, but Miss Lorillard did not now come down stairs at all. She could not inhale the sweetness of promise in the air.

The opium which had so long sustained her could not longer feign a strength which was not there, though it softened the almost interminable days of solitude.

Every morning, when Branwell inquired concerning her, the answer was, "she is nearly the same, perhaps a little weaker." And at last one day the servant came to him with the request that he would come to Miss Lorillard's room.

She was leaning back in a large lounging chair which was drawn up before the grate. She was dressed with elegance, but with all the comfort so necessary to illness, and the soft folds of her wrapper fell round her with the grace peculiar to everything connected with her.

Branwell's face grew a tinge paler as he looked at her—a pale shadow of what she once had been. Large-eyed, hollow-cheeked, with lips an unnatural scarlet even for her, and that saddest of all brilliance in her eyes—the last flame of a lifetime.

He came and sat down by her side, and took that thin hand with a gentleness that one who did not know them both might have said was tenderness. She looked at him intently with a gaze he could not interpret, for he had never seen it before.

At last, with a faint smile and an accent of the cynicism which was a part of her, she said:

"I never thought there was much merit in death-bed confessions, for one is sure of stepping so conveniently out of the way of all result of such avowals. But I have a story to tell you which the sure and near prospect of death alone enables me to relate. You will have patience if I am led into a longer relation than you may expect."

Branwell's face told her even before he replied in words, and she went on:

"I have a desire that you should know something of my childhood and early girlhood, for there are some people charitable enough to consider that one's early life has an influence upon all their remaining years. My birthplace was a small town in Massachusetts. My mother was a Frenchwoman, and my father an American. When I was so young as to be able to remember but vaguely about my first home, my parents removed to Paris, to the home of my mother. I could never respect either my father or my mother, though both were fond of me and dressed me with a display which they thought my beauty demanded. Every influence fostered all there was of untruth in me. I was a coquette as soon as I had become conscious of my beauty. I loved intrigue for its own sake, and my mother's associates were such as nourished that predilection. I finally discovered that my father was a professed and usually a successful gamester, but the fact did not shock me. In the fewest words I can tell you the sad truth—that at seventeen I was so far initiated in the ways of the world that nothing shocked me. I was urged to marry, but I was wilful and would not, though numerous suitors, of a rank above our own, begged for my hand. When I was twenty my mother died, and soon afterward my father, disgusted with

his want of success, removed to Germany, going from one watering-place to another as his fancy dictated. In those excursions I was his accomplice, my face and my address doing fully as much as his skill, until Clitheroe's daughter was but too well known. At Homburg I became acquainted with a young American, and for the first time fancied I was in love. My father was angry; he did not wish me to leave him, and opposed me to the full extent of his power, which, of course, had the effect of making me more reckless than ever, and I married the young man and we came to America—to New York. You can easily imagine that I should not make the most docile of wives. It was perhaps not his fault, but, well versed as I was, I was deceived in my husband. We quarrelled; I learned at last that the marriage between us was invalid, that he had been married previously, and that his wife was still living. I left him and resumed my maiden name."

She had been talking slowly, but she was fatigued; the bright spots on her cheeks deepened. She paused, and he said:

"You were a witness to my marriage—you are Louise Clitheroe, the witness of whom I could gain no clue."

"Yes, I am Louise Clitheroe. I was in the country for my health some six months after the discovery that I was not his wife. It was by accident that I learned of the ceremony that was to take place in the house near where I was. I was impressed by the unusual arrangement of the affair, and did not forget it, though I did not think of it then as anything from which I could construct any scheme. I had some money; for awhile I lived in comparative quiet, but such a life grew tame and insufficient for me. I was an adventuress by inheritance and education. I became acquainted with Morton, and he related to me the circumstances of your marriage, and told me of the great wealth you possessed. Then I inquired and found that the witness, Mrs. Trask, was dead, and the clergyman also. It was too tempting, too dangerously exhilarating for me to forego—this idea that came to me of claiming to be your wife. I prevailed upon Morton to testify falsely. I discovered that the marriage was secret, and I believed I knew well enough that the true wife would never appear. I thought of this long before I began the realization of my plans. As soon as I knew of the death of the minister and the witness, from that time I was resolved. I inquired carefully about your affairs, about Fermor Lorillard, about everything.

"I learned where you were—that you had recovered your sight, and that you were to return within a few months. At that time I was obliged to visit Paris on business, intending to return directly. I did so. Chance prompted you to embark in the same steamer, so that I met you sooner than I anticipated."

"Of course I had to run considerable risk, but every chance was in my favor. I felt very sure that once having known me it would not be probable that you would meet Fermor, and meeting her you could not know her, unless she chose to tell you."

Again she paused, her cheeks highly colored, a panting breath parting her lips. Her eyes were fixed on the grate where they had been nearly all the time she had been talking. She reached forward and took a glass from the table and drank. In the silence that followed she sat quiet, with clasped hands. Branwell saw the hurried flutter of her heart ruffling the drapery above it. She knew it was the quick march to death, and she was not sorry.

At length Branwell spoke in low tones that soothed her, for this man had more power over her than any one else had ever had. His words were simple enough.

"You are very tired. Shall we not defer this explanation?"

"The time is past for me to defer anything. What I do I must do now," she replied. "I shall be fatigued, but you must not mind if I stop in my story to recover the breath that is so fickle that it sometimes seems to leave me altogether." Then she went on:

"I own that I counted upon attracting you first. In that calculation I was not vain, for I had seen the effect of my power upon some men; but here I reckoned wrongly, for I judged you by a standard too low—far too low. You were not like any one I ever saw. Instinctively I knew how you felt toward me—that, without knowing why, you suspected my sincerity. Knowing you as I did—and, believe me, I knew you far better than you imagined—I yielded to a feeling which I had thought would never come to me, and I felt ennobled by it. It revealed to me that there was something beside evil in me; for even I, Mr. Branwell, felt that 'I must needs love the highest when I saw it.' I had been with you but a short time before I loved you—I love you now—perhaps not as pure women love, but still with all the best of me. But mark, I strove still harder to conquer you, for now I had a stronger incentive than your wealth. I would have willingly relinquished all hope of that, could I but have known that you would some day love me. I feel no constraint in telling you of my love, no more than if I spoke to you from a land of spirits. This earth has so far receded from me that I can speak to you as if my soul were face to face with yours. I love you; I feel within me the possibility that could there have been a mutual, happy love between us, I could have purified my heart to a whiteness forever lost to me."

Once more that silence, which was only less penetrating to Branwell's soul than her words had been. Indescribably agitated, he

rose and walked to the window, striving to attain some degree of calmness. No one could have listened to such words unmoved, and from such a woman. She turned her head and looked at him, a rare softness in her face.

"Return," she said; "do not fear that I shall continue to speak on a subject so painful. Let me go on with my confession. I shall at least depart shriven, for your kind heart will forgive me."

He came to her, he clasped her hand in both his own, and his voice trembled as he replied:

"Can you doubt it? Your childhood, the influences which surrounded you, have perverted your nature. Oh, in it I discern the germs of glorious possibilities!"

The close clasp, the earnestness of his manner affected her, so that the tears which had lingered in her eyes dropped on her face.

"You only could have thus directed me," she murmured, all art or reserve leaving her for a moment as her forehead drooped upon the hand that held hers.

Branwell was very unhappy, yet in it all was a profound relief. He put his other hand upon that bright hair; in that motion was a forgiveness for everything.

"And yet," she said at last, raising her head, "do not forgive me until you know all. It was a weakness in me to beg to hear words of pardon before I had a right to ask for them. I have yet much to say."

He sat down and waited.

"I will hasten, for the task is too humiliating for me to linger upon. I presume you have found my picture and a lock of my hair among your uncle's papers. Ah, I see that they did their work. One day in your absence, soon after I came here, I was for a long time alone in your library. I looked for the keys to that ancient desk; at last I found them, for you are not over-cautious with such things, as all your household is trustworthy. I searched among papers, and found there the hair and picture of Fermor Lorillard. From the appearance of the packet I was quite sure it had not been opened since your uncle's death. I changed the picture and hair for mine, and left them where you would surely find them when you next went to the desk."

"And you have the picture of Fermor Lorillard?" eagerly interrupted her listener.

She put out her hand as if entreating patience, saying:

"I am going to give it to you. On that day when you saved my life on the beach I had ridden over to Darton to meet Morton, who was to bring a certificate of marriage, the one I showed you, and a forged one, but well done, as you will acknowledge. His brother is a clergyman, as perhaps you recollect, and he easily enough abstracted a blank certificate from his study. For Morton's share in this business I have paid him all the money I ever received from you, and have been haunted and troubled unspeakably by him. He was weak and unprincipled, but he was half the time regretting that he had yielded to the bribe I offered him."

She hurried on as if anxions that the whole should be told.

"And now, I feel as if all could be forgiven easier than that which I have yet to tell. While you were absent last fall, when you went to C—— to substantiate or disprove my statements, there came a letter for you—a letter which I detained—which you did not know anything about."

Branwell, as he looked at her, felt his pulses rising tumultuously, as he thought of the possible source from whence that letter came, but he said nothing.

"Bring that ebony box to me, which you see on my dressing table," she said, "and I will give you all that is yours."

In silence he placed the casket on the table beside her. She took a key from her pocket and turned the lock.

He could not tell what he expected; nothing, he thought, would astonish him; and yet some deep, strong hope made him tremble as he waited for her to take the package from the box.

The hair, half disentangled from the paper, lay across her white fingers, and its darkness seemed more dark by contrast. He did not speak, but he thought: "It is the Fermor about whom the young man at C—— told me. She is dark." Then, as that idea flashed through his mind, she laid a daguerreotype case in his hand. He opened it, with her eyes upon him, and saw a face—oh, how utterly different from the one beside him! He could not mistake it, and that conviction sent the blood in very leaps through his frame; his eyes grew dark with their dilatation, for he looked upon the picture of the girl whom he had first seen in the Cave of the Winds.

It was none other, though this face was not more than sixteen years of age—dark, sweet, with a fire that womanhood had veiled, but not extinguished. A mist of passion, love, hope swam before his eyes; he thought he felt again a soft hand-touch he had known a few months ago.

He concealed his eyes with one hand, while he extended the other, and said:

"The letter."

She gave it to him, and the next instant he was reading words which she had written—she, his wife—in reply to the letter he had left for her when he had come away from Niagara.

The letter was not long. His fiery gaze devoured it with the swiftness of light.

"Your letter gives me the sweet power of saying that we shall not be separated, that the tie which holds you is the tie that binds you to me, for I was Fermor Lorillard. Dear

as is this writing to you, the thought that I shall soon see you is dearer still, and words which I cannot write will come to me in your presence.

"I leave Niagara directly, and shall be at Dorset, Vermont, where I know that you will come to me.

"FERMOR BRANWELL."

Meagre as were the words, there was a promise of divine happiness in them. He looked at the date: it was the day after he had left Niagara. She must then have thought that he had neglected, despised her note—perhaps laughed at her; that his words and acts had been the pastime of that despicable thing, a male flirt.

This woman by his side had spoken truly; this was the hardest to forgive. He could not look at her; he knew there was something hard as revenge in his eyes; he felt it was possible she might have spoiled his happiness forever. He longed to fly to her. He wanted to start at that moment. Then his gaze fell again upon the picture.

"My love! my wife!" broke from his lips with the passionate tenderness of a man who has passed his most susceptible years with no thought of love. The tone had all the impetuosity of youth, all the unalterableness of manhood.

Never until now had Louise Clitheroe fully realized the utter hopelessness of awaiting the time when he should love her. She had known there had been a strong attraction for him in the girl he had met at the Falls, but she had not known to what extent, to what strength the feeling had reached. Though she had thought she had given up all expectation of any tenderer feeling, it was only at this time that she really lost every gleam of hope.

She laid her hand on his arm and said:

"Did you then love her so?"

He raised his head and looked at her. She had never seen anything so glorious as were his eyes—they revealed to her the light that flooded his soul.

"Do not reply," she said. "I see, I know all. Oh, if I have been evil, I have also been unhappy! Victor, all whom I have wronged, are avenged."

She did not take her eyes from him; there was a look in them that would have alarmed him had he been less preoccupied.

"I knew Fermor Branwell when I first saw her," she said. "When we came up from the cave I first saw her face, and the sight of it seemed an irrevocable defeat of all my plans; for I believe that even then I was sure you would love her."

There was a sudden and strange break in her voice at the last words. She pressed her hands to her side, while the scathing of some dreadful pain passed over face.

Branwell sprang to her in alarm. Her head was leaned back on the cushions, and she turned it toward him with a smile.

"It is over, the pain is gone," she said. "You will go to your wife. Well, at such a moment as this I know that I love you well enough to be glad of the happiness she will give you; but then, I am dying. Have you still any forgiveness for me?"

She turned her face to the hand that lay on the back of her chair as he leaned over her; her cheek rested against his fingers as she whispered the last words.

He bent down. She faintly felt his breath over her face.

"Freely—freely, my forgiveness is yours," he said softly and earnestly.

She smiled again, a smile so full of pathos that it haunted him long after. Then her eyes flashed suddenly a wide, brilliant look on him, a sigh trembled over her lips, then eyes and lips had closed forever.

The day of the funeral was over. In a strange land the beautiful was laid at rest, and the waters of the bay would chant an eternal mass for her soul.

The next morning's sun rose clear and smiling over the earth that was still dripping from an April rain. An early train was carrying Branwell to Dorset. His impatient heart outsped everything, longing for its happiness. But when at last he reached the mountain-embosomed village, a presentiment of disappointment came to him. He inquired at the hotel if there was a Mrs. Branwell in the village. The landlord did not know. She had been some time ago at Mrs. Palmer's, and he directed him there. Branwell rang at a handsome country residence, whose windows overlooked the most picturesque part of the country.

He was shown into the parlor, where Mrs. Palmer, a bland, intellectual looking woman, received him.

"Mrs. Branwell went away in October. I am sorry, but your letter must have been delayed."

"Yes, it was delayed," was his response. "Can you tell me where she is now? It is necessary that I find her."

Mrs. Palmer was too well bred to betray the curiosity she felt as she glanced at her visitor and saw the ill-quelled emotion that he could not prevent from blazing up visibly.

"I suppose she is in Boston. She spends the winter there always, and visits me awhile in the early fall."

Branwell took his hat.

"And the address?" he said.

"No— Charles street."

He uttered his thanks and left.

It was not a long ride from there to Boston, and yet he suffered the intensities of hope and apprehension; and when at last he was ushered into the parlor in Charles street he looked worn, eager—his face full of conflicting

emotions. It was just at dusk. He sat down at the window, compelling himself to sit quietly, and glancing out upon the hurrying pedestrians and the lights that were beginning to glow.

A lady entered; he rose and turned toward her. It was his wife. That she too had suffered was evident, for the color of health had forsaken her, and an unsatisfied hope had written its language upon her face, though it was subdued and half conquered by a resolute pride.

Her manner was coldly indifferent. He could not wonder, though it was a thrust of pain to him. He could not endure that quiet politeness. He stood half way across the room, but his glance annihilated the distance between them.

"Fermor," he said, "spare me this torture. I have only just read your letter, and life itself seemed to stop within me until I could find you. And now you freeze, you kill me!"

To doubt would have been to doubt truth itself.

As one feels the returning warmth of summer after a cruel and long winter, so through Branwell's soul there poured the ineffable light and sweetness of that melting voice. Once more he felt the soft touch of her hand in his, and in tones tremulous with half-restrained, passionate happiness, she said:

"All torture and waiting are recompensed, O my husband, for we love!"

MARIA LOUISA POOL, *In the Galaxy.*

DOMESTIC ECONOMY.

CURING MEAT.

For many years past I have used with success, for salting beef, the following preparation, viz.: One ounce of saltpetre, one pound of brown sugar or a pint of molasses, to each quart of salt. Mix these ingredients in the above proportions, rub the beef well, pack it down in a tight barrel, and put a weight upon the meat to keep it down, and beef will make its own pickle. If towards spring the pieces not consumed are hung up and smoked, they will prove a very nice relish during summer.

For Bacon—I rub the meat as soon as cold with plain salt, and place it on an inclined surface and allow it to drip for two days Then for every 100 lbs. of meat, I boil together, 5 oz. saltpetre, 5 lbs. brown sugar, (or 5 pints molasses,) and 10 lbs. of salt, in 3 gallons of water, skimming until clear, and when cold, I pack the meat carefully and compactly, weight it down, then pour this pickle over it, and if not enough to cover it, I make more pickle, so as to have the meat covered. Let it remain for six or eight weeks, (longer in cold weather,) hang up, allow to dry, then smoke with hickory if possible. The hams when smoked will be of a bright red color and nice enough for any epicure. A receipt that will cure sound meat in our mild, damp sea island climate, will be sure to cure it anywhere else. C.

HOUSEHOLD NOTES.

Burgardien's Paste Glue.

M. Burgardien, of the Museum of Narboune, has given his name to a cement of great value, which is, however, nothing more than silicate of potassa. It is used to join or solder together various broken things, such as iron, blocks of stone, marble or wood, of the largest size, or the most delicate fragments of statuary, vases, mosaics, pottery, glass—in short, almost anything. With a small brush, spread the silicate of liquid potassa over the surfaces to be joined, then press them together as closely as possible. After being kept in this position a short time, they adhere perfectly; one may even strike the articles a considerable blow without breaking them. Neither fire, water nor ice affects this artificial adhesion

How to Know Good Meat.

When poultry or other meat is fresh and good, it has a firm, hard feel, and is elastic; tainted meat feels soft, and returns to its shape slowly when indented, like dough when pressed with the finger. Fresh meat well killed, does not moisten the finger; tainted meat does and has a slimy feel. Keeping meats until they are about "to turn," makes them tender to eat, but they are harder to digest than fresh meat.

Miscellaneous Hints.

Ribbons of any kind should be washed in cold soap-suds and not rinsed.

If your flat irons are rough rub them with fine salt, and it will make them smooth.

If you are buying a carpet for durability, choose small figures.

Scotch snuff put on the holes where crickets come out will destroy them.

A gallon of strong lye put in a barrel of hard water, will make it as soft as rain water.

For Our Young Folks.

THE FAITHFUL SHEPHERD BOY.

Gerhardt was a German shepherd boy; and a noble fellow he was, too, although he was very, very poor. One day he was watching his flock which was feeding in a valley on the borders of a forest, a hunter came out of the wood and asked—

"How far is it to the nearest village?"

"Six miles, sir," replied the boy; "but the road is only a sheep track, and very easily missed."

The hunter glanced at the crooked track, and then said—

"My lad, I am hungry, tired and thirsty. I have lost my companions and missed my way. Leave your sheep and show me the road. I will pay you well."

"I cannot leave my sheep, sir," rejoined Gerhardt. "They would stray into the forest, and be eaten by the wolves or stolen by the robbers."

"Well, what of that?" queried the hunter. "They are not your sheep. The loss of one or more wouldn't be much to your master; and I'll-give you more money than you ever earned in a whole year."

"I cannot go, sir," rejoined Gerhardt very firmly. "My master pays me for my time and he trusts me with his sheep. If I were to sell you my time, which does not belong to me, and the sheep should get lost, it would be just the same as if I stole them."

"Well," said the hunter, "will you trust your sheep with me while you go to village and get me some food and drink and a guide? I will take good care of them for you."

The boy shook his head. "The sheep," said he, "do not know your voice, and"—Gerhardt stopped speaking.

"And what? Can't you trust me? Do I look like a dishonest man?" said the hunter angrily.

"Sir," said the boy slowly, "you tried to make me false to my trust and wanted me to break my word to my master. How do I know you would keep your word to me?"

The hunter laughed; for he felt that the boy had fairly cornered him. He said, "I see, my lad, that you are a good, faithful boy. I will not forget you. Show me the road, and I will try to make it out for myself."

Gerhardt now offered the humble contents of his scrip to the hungry man, who, coarse as they were, ate them gladly. Presently his attendants came up; and then Gerhardt, to his surprise, found that the hunter was the grand-duke, who owned all the country around. The duke was so pleased with the boy's honesty, that he sent for him shortly after, and had him educated. In after years Gerhardt became a very rich and powerful man; but he remained honest and true to his dying day.

Honesty, truth and fidelity are precious jewels in the character of a child. When they spring from piety, they are pure diamonds, and make their possessor very beautiful, very happy, very honorable and very useful. May you, my readers, wear them as Gerhardt did. Then a greater than a duke will befriend you; for the great King will adopt you as His children, and you will become princes and princesses royal in the Kingdom of God.—*Young Pilgrim.*

THE RHYMING GAME.

One person thinks of a word, and gives a word that will rhyme with it. The players, while endeavoring to guess the word, think of those that will rhyme with the one given, and instead of speaking, define them. Then the first person must be quick in guessing what is meant by the description, and answers whether it is right or not, giving the definition to the question. Here is an example:

"I have a word that rhymes with bun."

"Is it what many people call sport or merriment?"

"No, it is not fun."

"Is it a troublesome creditor?"

"No, it is not a dun."

"Is it a kind of fire-arm?"

"No, it is not a gun."

"Is it a religious woman who lives in retirement?"

"No, it is not a nun."

"Is it the act of moving very swiftly, or what one does when in great haste?"

"No, it is not to run."

"Is it a quibble or play upon words?"

"No, it is not a pun."

"Is it a word that we often use to denote that a thing is finished?"

"No, it is not done."

"Is it a weight?"

"No, it is not a ton."

"Well, is it that luminary that shines by day, and brightens everything it shines upon."

"Yes, it is the sun."

PERPETUAL YOUTH.

Youthfulness of form and features depends upon youthfulness of feeling:

Spring still makes spring in the mind
When sixty years are told—
Love wakes anew the throbbing heart,
And we are never old.

If, then, one would retain youthful looks, he must avoid everything calculated to make him *feel old*, and cultivate a cheerful disposition and a loving heart.

LITERARY NOTES.

The Science of Health is a monthly journal devoted to hygiene and physical culture for popular instruction, and not a medical publication, in the ordinary acceptation of the term; and whether all its very radical doctrines in the treatment of disease be accepted or not, its teachings in regard to the means of preserving health are generally sound and valuable, and are nowhere more needed than here in the South. [S. R. Wells, Publisher, New York; $2 a year.]

Appleton's Journal has been enlarged to the extent of four additional reading pages, while a cover encloses it. In this form it takes more definitely its place as a weekly household magazine. We have no hesitation in pronouncing it the best weekly journal in America. [D. Appleton & Co., New York.]

The sixth and last part of DeFontaine's "Cyclopedia of the Best Thoughts of Charles Dickens" has been received. The whole will make a handsome and valuable volume. [Price, 50 cents for each number; E. J. Hale & Son, New York.]

Dr. Dio Lewis' newspaper, *To-Day*, is published in Philadelphia by Maclean, Stoddart & Co., weekly, at $2 50 a year, and we need hardly add is well worth the money and a good deal more.

PERSONAL NOTICES.

Dr. E. M. Pendleton, of Sparta, has been elected Professor of Agriculture in the State Agricultural College of Georgia. We congratulate the institution on its fortunate acquisition, trusting that while the college gains an able professor we shall not altogether lose a valuable contributor.

Hon. D. W. Lewis has been elected Principal of the Agricultural School at Dahlonega, Georgia, and the selection is an admirable one. Mr. Lewis being a gentleman and a scholar as well as an accomplished agriculturist.

Dr. M. W. Phillips, editor of the *Southern Farmer*, has been elected to the chair of Agriculture in the Mississippi Agricultural College. A well deserved tribute to a veteran agriculturist.

That most excellent monthly, *The Rural Alabamian*, published at Mobile, gains an able hand in Dr. H. A. Swasey, late of the *Rural Southland*, who becomes associated with C. C. Langdon, in the editorial management.

D. Redmond, Esq., has retired from the editorial management of *Our Home Journal*, New Orleans, and is succeeded by James H. Hummel, Esq.

MERE MENTION.

The length of several articles in this number and the necessity of publishing much matter on hand, which would otherwise have been unseasonable, have compelled us (though we give *four additional pages of reading matter*) to encroach upon the space which should have been devoted to Literature and Home interests. We shall make amends by giving that department extra room in succeeding numbers.

——A correspondent of the Camden *Journal* says: "I know of several instances, where, on two-horse farms, there have been made this season, twenty bales of cotton to the horse, besides provision crops. Hundreds of farms await development right around this town. Shall such a country go to waste or sink under misrule?"

——A daughter of the Rev. Charles Kingsley has been making an extensive journey through the United States, North, South, East and West, and is preparing a work relating her travels and observations.

——The Palmetto Orphan Home at Columbia, is progressing very encouragingly. The board of Trustees have selected a large lot of six acres, with a spacious house, in Columbia, which will cost, with necessary repairs, about $8,000.

PAMPHLETS AND CATALOGUES.

"Indigenous Sugars and Directions for making Sugar from Melons," by W. Wadsworth Dewey & Co., San Francisco, Cal. This pamphlet embraces about all that is known on the subject of Melon Sugar.

"What we know about Turnips," by David Landreth & Son, Philadelphia. Printed for private presentation.

Catalogues of Syracuse Nurseries. No. 1, Fruit Department; No. 2, Ornamental Department. Smith, Clark & Powell, Syracuse, N. Y.

The Steam Plough at Bloomsdale.

THE

Rural Carolinian.

Progress with Prudence, Practice with Science.

D. H. JACQUES, EDITOR.

Vol. IV.] CHARLESTON, S. C., FEBRUARY, 1873. [No. V.

Thoughts and Suggestions for the Month.

There will be found no time for idleness during this short, but busy month. "Push" is the word now. If we loiter at this time, the push will be sure to come a little later, and it will be the work that will push us and not we who shall push the work. Keep the ploughs running, and see to it that every furrow is well made. The days of "scratching" the soil are over. Mr. Dickson said to us, one day, "I can always tell, in advance, where the 'dry streak' will fall in the summer. It always follows the bad farming." There is more in this than is generally thought. Lazy, slip-shop, surface-scraping, land-skinning farmers always have "bad seasons." It is sure to be too dry or too wet, too cold or too hot. "Just my cussed luck," Slack says. "My crop is all burned up on this droughty upland. If I had planted that low, moist land, yonder, I should have made a good crop." Next year Mr. Slack plants the low field, but his "cussed luck" follows him still. It is too wet, and his crop is drowned out. So it will be to the end, unless he shall pursue a more rational mode of culture, and manifest less aversion to *work*. Mr. Slack does not read the RURAL CAROLINIAN, or we might be tempted to say more for his special benefit. For those who do read it, this will be a sufficient hint. Do not forget that the better the winter's work is done, the lighter will be that of the spring and summer, and the better will be the crops.

———We hope the readers of the RURAL CAROLINIAN were wise enough to plant oats in the fall, and to plant early and largely, but if any failed to get in enough, we advise to try a spring crop by all means, for although the chances are not so good as for the fall sown oats, a fair crop may be got and will help greatly. The oat plant is not so particular in regard to soil as many others, but it must not be too wet. The land intended for spring oats should have been ploughed early in the winter and cross-ploughed before sowing. The early breaking up, however, is not essential. The time of sowing must, of course, vary with the soil and season, as well as with the latitude. In this latitude and southward, we would sow during the present month, if the land be not too wet, but March will not be too late, if you can not get them in sooner. Writers on agriculture mention nine or ten

varieties of the oat. One of the best and heaviest is the Black Poland, sometimes weighing fifty pounds to the bushel; but the safest kind for our climate seems to be the Red Oat, known by its brownish red husk and its exemption from rust.

———Some advocate the deep cultivation of corn and contend that the breaking of the roots does no harm, but, on the contrary, is a benefit, tending to fruitfulness, as in the case of a non-bearing pear tree. It is only under certain conditions that root-pruning will benefit a tree, and it is doubtful if these conditions exist at all in the case of the corn. We have no doubt, however, that a corn crop is sometimes benefitted by deep cultivation; not because the roots are thus cut and mangled, but in spite of this destruction of the plant's feeders. Stiff soils, especially when badly prepared, often become, during the growth of the crop, very compact and hard, impervious alike to the tender roots of the plants and to air and moisture. To cut the roots of the corn, in such cases, in deeply breaking up the soil between the rows, if done when it is tolerably moist, is a less evil than to leave it in its indurated condition. The same process on a loose, sandy soil, and in a dry time, would utterly ruin the crop. This is another hint in regard to the benefit of *brains* in farming.

———It would be folly to lay down a precise rule, either in regard to the time or the mode of planting corn, for the guidance of all the readers of an agricultural magazine. Diversities of climate and soil, as well as other important considerations, must necessarily modify the practice of the planter; but when we say, prepare the ground thoroughly and in good season, and plant as early as the weather and the state of the soil will permit, we think our advice can hardly be called in question. It is true that late planted corn sometimes gives a better crop than that which is put in earlier, but this is the exception. As a rule, the early planted corn is best. In Florida and elsewhere within the Southern limits of our extensive parish, much corn will be planted this month. Let the work of preparation be pushed at all points.

——— On well drained uplands, with a sandy soil, we have been accustomed to "lay off" our corn land with pretty deep furrows, so that, when the corn is properly covered, the "hill" will be an inch or two below the general level. The first working brings the whole field to something like an even surface, and subsequent cultivation does not change it much, being very shallow. We have seen fields thus planted and worked, looking green and healthy, and making fine crops, when neighboring fields, ridged up and more deeply cultivated, have "fired" badly, and made almost a total failure from the effects of drought. Low and imperfectly drained land, where the greater danger is from an excess of moisture, cannot, of course, be treated in this way, and our readers will not understand us as advising the same mode of planting for all soils and situations.

——— To make a heavy crop of sweet potatoes, one of the most important points is to plant early. No season is too long for this crop, and the earlier we get the "patch" planted, the better. To this end it is necessary to bed our seed early and liberally—say four bushels to every acre to be planted—so that slips, or "draws," may not be lacking to plant out in April and May. These will yield heavily. Let later plantings be made, if necessary, with cuttings of vines.

Notes on Planting.

No. II.

In a previous number we ventured some hints upon planting in the pine lands of the South, suggesting a general scheme of cultivation, and speaking in detail of the proportion and arrangement of fields, forests and pasture. Ditching and plantation roads were also noticed. We propose to conclude what we have to say of the planter's investment in real estate, by considering the subject of fences, buildings, and the arrangement of the farmstead :

Fences.—The fencing of crops is an unmitigated nuisance. A report to the Beech Island Farmers' Club presents the matter forcibly. The law, said in substance the Committee, of which Mr. S. S. Hammond was Chairman, permits any one to consume or destroy all crops, natural or cultivated, when not thoroughly guarded. If damages are sought, there must be shown to have been a fence strong, sound, and of legal height and closeness throughout. Any defect or decay, whether by wind, fire, floods, or even the malevolence of third parties, is fatal. And in thus requiring the owner to guard and protect his crops, and holding the aggressor as justifiable and blameless, our law of enclosures was properly characterized as based on a principle adverse to all laws, as well as justice and the rights of property. Mr. Hammond estimates the cost of fencing the improved lands of South Carolina at four dollars per acre. General Chesnut's estimate, in a report to the South Carolina State Agricultural Society, in 1859, is four dollars and a quarter. The duration of the ordinary rail fence of the country is known to be about ten years ; and this gives an annual assessment upon the planter for fencing his crops, of forty cents per acre. There are about 4,000,000 acres of improved land in the State; and we thus arrive at the enormous amount of $1,600,000 as the annual cost to our impoverished people, of fencing their crops—a sum four times what sufficed for the entire administration of the State Government before the late civil war. The United States Agricultural Report for 1871, in discussing the statistics of fences in the United States, places these figures still higher. South Carolina is credited with $21,136,896, invested in fences, upon which the annual depreciation would be $2,113,689. The estimates of Messrs. Hammond and Chesnut, are only for boundary fences; that of the Department includes cross-fences, and is corroborative. This law of enclosures had its origin in the early settlement of the country, when the areas devoted to tillage were small and scattered, and the unreclaimed forest lands afforded valuable pasturage. It was then cheaper to fence the crops than to fence the live stock, which might devastate them. Now, when circumstances are directly reversed; when the pursuits of the people are agricultural, not pastoral ; and the pasturage of the lands remaining unreclaimed both by overstocking and by natural causes,* has become well nigh worthless, the system

*The early writers describe the forests of Middle and Upper South Carolina, at its discovery, as Park-like, with a thick carpet of grasses and pea-vines beneath the wide placed trees. There was none of the scrub undergrowth which now excludes the grasses. In numerous places and over wide areas now covered with trees, the maiden cane, one of the most nutricious of grasses, extended to the hill tops, and not a tree was to be found.

seems to be ingrained in our policy. Even before the recent changes in our government, the proposition to fence stock met with little favor from the unintelligent masses; and now that the suffrage has been so thoroughly debased, it is not likely that Legislative action will abate the evil. Fences for his crops are therefore a necessity which the planter must accept as inevitable; he can only seek to make it as little burdensome as possible.

Where timber remains comparatively abundant, as it does throughout the whole region of which we write, there is, in point of cheapness and availability, no competitor with the ordinary rail fence of the country. It is of that the estimates of cost by Mr. Hammond and Gen. Chesnut are made. To one who has to hire the teams and purchase the timber, the cost is not over-estimated. To the planter who can thus employ teams, which would otherwise at the time be idle, who can use for this purpose timber, that would otherwise be wasted, or for which there is no sale, and who has his forests judiciously located with a view to fencing, the cost will be somewhat less. Rails, eleven feet long and five inches average diameter, make a good fence, allowing six inches lap at each end, and five feet crook in the worm. Ten rails with stake and rider, being thirteen rails to the panel, will make a fence five feet high, and each panel will fence seven and a half feet in a straight line. Thus for such a fence there will be required one rail for every seven inches in length to be guarded, and costing in its place under ordinary circumstances, about one and three-quarter cents.

A modification of the rail fence introduced by Maj. Lartigue, of Blackville, S. C., has much merit. It is exhibited in the following Fig. 1. One lath four inches wide, one inch thick, and twenty feet long, (six and two-thirds feet of lumber,) makes each post. The upright studs are five feet high, and as wide apart as will fit the average rail to be used. The braces have a splay of four feet six inches at bottom, and are nailed with three 8-penny nails at each point of crossing a stud. A hand, with saw and hammer, will make one hundred and seventy-five posts in a day, and two hands working together, with every thing in its place, will put up three hundred yards of the fence. Nine rails are needed to the panel of ten feet, or one rail to every thirteen inches of length to be guarded. Thus, nearly one-half less rails are used than in the worm fence, and on ten feet of length, eight rails are saved, costing fourteen cents. The post, which effects this saving, will seldom cost more than twelve cents; and not entering the ground, but resting on the surface, should last well. The fence thus made is not easily upset by either stock or winds; but requires extra care in the construction to make it *pig tight.*

Fig. 1.

With the arrangement of the plantation suggested in our previous number, the necessary fences are those of the Farmstead, and Lots, the Pasture fence, which is also the interior fence of the principal fields, and an exterior fence. In this last, which is the longest, it will be practicable to economize distance, by throwing out or including portions of the rail forests, as necessity requires, instead of follow-

ing the outline of the fields, and thus approximate the figures in which the shortest perimiter will enclose the given area. These are: 1, The circle; 2, the square; 3, the equilateral polygon.

In the principal fields division fences may be dispensed with, or one movable fence may be used to divide the cotton from the grain. In the rotation it will remain two years in one place, and one year in the next.

Buildings.

Double (or tenement) cabins, for laborers, collected in a quarter have many advantages, but with the lax discipline of free labor, the disadvantages predominate. It is found best to put each family to itself, at a sufficient distance apart to prevent occasions of disagreement, and yet within a reasonable distance of the farmstead. At least two cabins should be at this last for the occupation of those having more directly charge of the stock. The detached cabins may be made of logs, with clay chimneys, as cheaper, and equally satisfactory to the negro laborer. Indeed, if properly built, they are as comfortable, if not as sightly as framed houses; and when desired, their location may be changed with the facility of a hurdle fence.

The buildings at the farmstead consist of the manager's cottage, the cabins of the stock-minders, the barn, stables for stock, wagon shed, work-shop, and gin-house. These, as more permanent in character, should be framed houses with brick foundations, and when chimneys are required, they should also be of brick. A due attention to proportion, and the proper projection of the roofs, and lintels of doors and windows, will, at no additional expense, give something of architectural effect. Economy is also consulted by what is known among carpenters as "baloon framing," dispensing with tenons and mortices. Special attention should be given to the sills, which are the first part to decay, and troublesome to renew. There is no better material than the fat lightwood so easily procured. The weather boarding should not be planed, which is an unnecessary expense, not compensated by the longer last of the boards. Besides, when rough, it will receive and hold whitewash better. These buildings should receive a coat of this annually, or at least every other summer. It is neat, healthy, and inexpensive. A man will whitewash from twelve to fifteen hundred square feet of surface on a building per day, making no allowance for mixing the wash, or moving his ladder. A good receipt is to slack the lime over night in boiling water, and next day add cold water enough to bring it to the desired consistency, putting two pounds of salt to the bushel of lime. The barn and gin-house should be made, if possible, rat and burglar proof. Neither can be done. Cats, protected and fed, will keep down the first; and the building, ceiled from the floor to the ridge of the roof, with good locks, will generally protect against the furtive, rather than forcible attempts of the plantation burglar. In the stabling of work stock and cattle, a separate and secure stall should be provided for each animal on the place, older than a sucking calf or colt.

The colt is with its dam; the suckling calves may be housed together. A southerly exposure of the stabling is very important, both to avoid the cold northern and eastern winds of winter, and to obtain the advantage of the prevailing southwesterly winds of summer. Mangers are preferred to the ordinary rack and

trough for feeding. The floors should be raised above the general level by packing in clay, and the adjacent yard where the animals are turned for exercise should always be supplied with a trough and water. The piggery, in this climate, while having some shelter should not be rain proof; the hogs are healthier by it. It should be a series of log pens, six feet high and covered with logs securely fastened with a locked door and plenty of straw. The hogs are placed in it at night for protection from thieves; in the day time it is contemplated for them to have the range of the pasture and farmyard.

Though not without some disadvantages, convenience is consulted in the following arrangement of

THE FARMSTEAD.

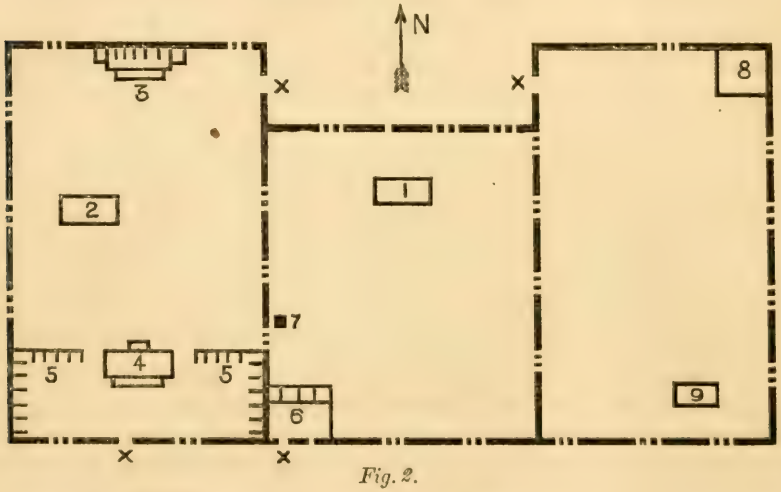


Fig. 2.

1. Manager's Cottage.
2. Wagon Shed.
3. Mule Stable.
4. Barn.
5. 5. Cattle Sheds.
6. Piggery.
7. Well.
8. Gin House.
9. Workshop.
* Gates.

The manager's cottage is central and gives opportunity of close and constant supervision. The wagon shed should be a story and a half; part of the lower story being weatherboarded off for gear and small implements, the rest open for wagons and carts. The half story above open to the rafters, with a door in each gable, will give a roomy forage loft.

The mule stable is preferred, 18 feet width; a range of box stalls, 12 x 8 feet, running along the northern side, (the manger will occupy two of these twelve feet,) and leaving a six foot passage the whole length of the stable. An open shed should protect the southern front, and at each end a shed may be boxed up, giving two separate stables, 10 x 15 feet for the use of a mare and foal, or weaned colt. Ventilation and light are of prime importance here. The apertures for these should be at least two feet above the mules back. It is not desirable to have a fodder loft over a stable; if, however, this is done, one or both of the end sheds must be

omitted for convenience of unloading a wagon through the gable door. In this event a separate hovel and paddock must he made for the mare and foal.

The Barn. A building 50 x 20 feet, and 10 feet in the story, will give two capacious bays, and a roomy passage 10 feet wide. The bays will have (up to the joists) a capacity of 4,000 cubic feet of space, and together will store 6,400 bushels of shelled grain, half that quantity of corn on the cob, or over 2,000 bushels of corn in the shuck. The space above the joists may be appropriated to long forage. It will be found a good plan to make each bay a separate crib by running the partition above the joists, and having a locked door opening on the passage, in which a supply of feed for a definite time may be put and kept. Over the door of the barn there should be a stoop to keep out rain; the posts of a shed are in the way of wagons driving up. In rear, there should be a closed shed the length of the building, into which an aperture at the back of the passage will permit the shucks to be thrown as taken from the corn. This aperture admits of being securely closed on the inside of the barn, and a door from the shed into the yard, gives access to the cattle-minder.

The cattle sheds should be twelve feet wide, (two and a half feet being taken up by the manger,) five feet high at outer side, and ten feet high on inner side; the stalls eight feet wide and closed by bars or gate. The partitions are best made by dropping extra stout and sound rails between double studs. The yard should be ditched around, if necessary, to keep out all water that does not fall in it. Direct access by gate, both to the cattle-yard and piggery, should be had from the pasture. The cattle sheds must be detached by nine or ten feet from the body of the barn, to permit the driving of wagons for unloading into its gable windows. These spaces, as unfrequently used, may be closed by slip bars.

The position of the well is such, as, by gutters, to supply all the stock troughs.

Ward's Gate, fully described in the first volume of the RURAL CAROLINIAN, p. 625, is from an experience of eighteen years highly recommended, provided it is made and *hung* exactly as he there describes. This for all the principal gates of the farmstead and plantation. For the lots and fields, however, where wagons seldom go, slip bars are sufficient. By the side of each of these should be put a gate four and a half feet wide for the ordinary use of animals and pedestrians. The following cut shows one that is both cheap and lasting:

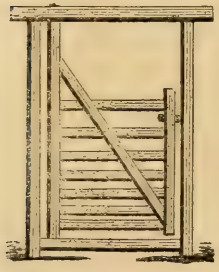


Fig. 3.

From the gallows arrangement, there will be no sugging with light posts put two feet in the ground. It is made without nails or iron hinges. The brace is dovetailed into the heel post, and pinned on to that as well as each bar.

In our next article, the live stock of the plantation will claim attention.

LOW MIDDLING.

At a local meeting in New England one speaker said he considers the value of his farm enhanced fully $1,000 in consequence of the attractiveness given to it by *five elm trees* planted along the roadside by his grandfather 85 years ago.

Experiments with Fertilizers.—1872.

The land upon which the following experiments were made is a light gray surface soil, subsoil coarse yellow clay at the depth of from three to six inches from surface. The plat was well drained and slightly rolling to the east and west, and as near uniform in appearance and condition as I could select. The plat lay fallow last year, (1871,) after oats. Corn before oats the year previous. The corn had a slight manuring with Soluble Pacific Guano, but the yield of both corn and oats was very small.

Nos.	Manure.	Quantity per acre.	Cost.	Product per acre Seed Cotton.
No. 1	Nothing	.....	.....	270 lbs.
" 2	Dissolved Bone, (Etiwan)	350 lbs.	$ 7 50	540 "
" 3	Dissolved Bone, (Etiwan)	180 "	3 75	480 "
" 4	Guanape	210 "	7 50	630 "
" 5	Guanape	105 "	3 75	510 "
" 6	Carolina Fertilizer	220 "	5 50	570 "
" 7	Carolina Fertilizer	110 "	2 75	450 "
" 8	Etiwan Guano	220 "	7 00	570 "
" 9	Etiwan Guano	110 "	3 50	510 "
" 10	Nothing	.....	.....	150 "
" 11	Etiwan Crop Food	350 "	5 60	570 "
" 12	Etiwan Crop Food	175 "	2 80	450 "
" 13	C. Manure No. 1	250 "	6 25	550 "
" 14	C. Manure No. 1	125 "	3 15	630 "
" 15	C. Manure No. 2	250 "	6 25	690 "
" 16	C. Manure No. 2	125 "	3 15	570 "
" 17	Phospho-Peruvian	210 "	6 60	660 "
" 18	Phospho-Peruvian	105 "	3 30	540 "
" 19	Palmetto Acid Phosphate and Guanape	250 "	5 00	540 "
" 20	Palmetto Acid Phosphate and Guanape	125 "	2 50	570 "
" 21	Palmetto Acid Phosphate and Cotton Seed	500 "	6 40	630 "
" 22	Palmetto Acid Phosphate and Cotton Seed	250 "	3 20	480 "
" 23	Nothing	.....	.....	240 "
" 24	Etiwan Acid Phosphate and Plaster	420 "	5 80	630 "
" 25	Ville's Complete Manure	1100 "	39 00	1710 "
" 26	Ville's Complete Manure with Sulph. Magnesia	1200 "	42 00	1260 "
" 27	Complete Cotton Manure	840 "	16 00	1095 "
" 28	Complete Cotton Manure	420 "	8 00	765 "
" 29	Cotton Seed, A. Phosphate and Plaster	600 "	6 00	660 "
" 30	Cotton Seed, A. Phosphate, Plaster and Muriate Potash	600 "	9 10	780 "
" 31	Plaster	420 "	4 00	435 "
" 32	Plaster	210 "	2 00	390 "
" 33	Nitrate Potash	200 "	16 00	420 "
" 34	Sulph. Magnesia	240 "	7 00	420 "
" 35	Sulph. Ammonia	240 "	20 00	255 "
" 36	Nothing	.....	.....	345 "

NOTES.

Nos. 19 and 20.—Composed of six parts Acid Phosphate and one part Guanape.

Nos. 21 and 22.—Equal parts Acid Phosphate and Cotton Seed, composted six weeks.

No. 24.—Equal parts Acid Phosphate and Plaster.

No. 25.—According to Prof. Geo. Ville's Formula.

No. 26.—Same as 25, with Sulph. Magnesia—added one-ninth of latter.

Nos. 27 and 28.—Three parts Acid Phosphate, three parts Plaster, and one part Nitrate Potash.

No. 29.—Equal parts of each.

No. 30.—Three parts Acid Phosphate, three parts Cotton Seed, two parts Plaster, and two parts Muriate Potash.

These experiments were made upon plats one-sixtieth of an acre each; say, two rows half acre long, three and a half feet apart.

The ground was broken by row with common cast turn-ploughs. About middle of March, run a long shovel in centre-furrow and threw back, one furrow with turn-plough, and upon this the manures were distributed, and the bed completed with three more furrows of same plough. The beds were leveled off with a log, used as a drag, and the seed planted with a Huggins' Planter on the 26th April. The seed used were of my own selection. A fair stand was obtained, but a little replanting was done to attain a perfect stand, chopped out and thinned to a stand about the 5th June. The cultivation was the same as the other parts of my crop, with hoes and sweeps, as required.

A few points in connection with these experiments merit attention.

1st. The small difference in yield produced by different quantities of the Fertilizer, as instanced through the whole list, employed.

2d. The remarkable fact that "C. Manure" No. 1, when applied at the rate of 125 pounds per acre, yielded 80 pounds more per acre than 250 pounds of the same manure applied immediately by the side of it—the latter costing $6.30, the former $3.15. The same applies to Nos. 19 and 20, where a mixture of Palmetto Acid Phosphate and Guanape were employed, where 250 pounds, at a cost of $5, were used, the yield was 30 pounds below what was produced by half the quantity at half the price.

3rd. That the most economical manure for general use on cotton is the mixture of Acid Phosphate and Guanape. See what it did applied at the rate of $2.50 per acre. Next in point of economy is the cotton seed and Acid Phosphate mixed, or that with plaster added. Cotton planters have the cotton seed and there is no outlay for them. They furnish all the ammonia required where applied in quantities of 125 lbs. and upwards, per acre. I have tested this two years upon a large scale, and two dollars worth of Acid Phosphate and 125 to 150 lbs. cotton seed per acre have produced as good results as from six to ten dollars worth of commercial fertilizers.

4th. Acid Phosphate and Plaster promises well for cost, &c. See No. 24.

5th. With Ville's complete manure, the results speak for themselves. The results were not so good as anticipated, but think they show that those gentlemen who have doubted the applicability of the teachings of the distinguished French agriculturist, to our soils, climate and crops, are mistaken, and perhaps we have achieved less than his manure or formula is capable of under more favorable conditions of soil, &c., &c.

6th. No. 27 shows that Ville's Formula may be modified and cheapened; the future may develope how much and how.

Nos. 29 and 30 show good crops, and the notes will explain how they are prepared.

Nos. 33 and 34 show an equal production by Nitrate Potash and Sulphate Magnesia, showing that both in themselves are of considerable manurial value.

No. 35 shows that Sulph. Ammonia, the most concentrated form in which ammonia is employed, produced less than nothing, though $20 worth was employed per acre, but where used in combination in Ville's Formula, it increased the production 500 pounds more than the other elements by themselves were capable of.

ED. B. SMITH, M. D.

Bonevinto, S. C., Dec. 11, 1872.

Underdraining for Profit and Health.—III.

EXCAVATING DEEP DITCHES.

Cases often occur in which it is necessary to sink a ditch five or six feet, or even more, in order to secure a uniform grade. In loose ground, the banks of such ditches are liable to cave in and cause a great deal of additional labor in throwing out the earth. To remedy this difficulty, procure two wide planks, from sixteen to twenty feet long; place one on each side of the excavation, and drive in a brace or prop between them at each end, as represented in the accompanying cut, (Fig. 1.)

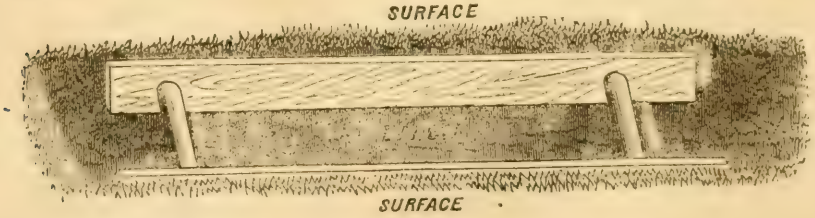


Fig. 1.

A width of two feet will be sufficient to enable the ditcher to sink the excavation five or six feet without danger of caving in. By the use of the level, the section thus protected can be rightly graded and the earth returned, when the planks can be moved to the next section, or to any other place where they may be required.

THE MINIMUM DEPTH OF DRAINS.

When the land is to be cultivated, as all land that is worth draining for agricultural purposes should be cultivated, by deep ploughing and subsoiling or by spading, no ditch should be less than thirty inches in depth. After a ditch has been sunk to this depth, any further depth should be determined by the distance required to cut of any water veins. Drains are often made three and even four feet in depth, when, it is assumed, they may be made proportionally further apart; but the economy of this system is more than doubtful.

GRADING THE BOTTOM OF DITCHES.

When there is considerable slope to a ditch, it is important that the descent of the bottom should be uniform, from the summit to the lowest point of the outlet, the object being to secure a uniform current of the stream. The subject is elucidated by the help of the accompanying diagram, (Fig. 2,) as follows:

A B represents the uneven surface of the slope, where the drain is to be made. There may be, for example, a marsh a little above *b*, to be drained. Instead of making the bottom of the drain to correspond as nearly as may be with the uneven surface of the slope, as represented by the line *c d*, of numerous angles, the bottom should be graded as straight as a line from *e* to *f*; then water will flow from one end to the other with a uniform rapidity. A horizontal base-line at the outlet of the drain is represented by the dotted line *o g*. To commence properly, drive a stake three feet high at *h* and one at *k*, where the ditch is to be cut; then drive another at *i*, so that the tops of each will be in an exact line as represented by the dotted line beneath *h i k*. The stakes at *h* and *i* must be just far enough apart to support the two legs of the level. After the stakes, *h i*, are driven, place the level on the top of them, and make a mark on the cross graduated bar at the point where the plumb-line settles while the rule is on the tops of the stakes; the ditcher will then have a cheap and reliable rule to enable him to grade the bottom of the ditch with the most desirable accuracy, at any point from *a* to *b*. Let him commence at *a* and sink the ditch as deep as the outlet can be dug; set the level in the bottom frequently until the correct inclination is secured; then, if there should be any danger that either bank will cave in, let the tiles, planks, or stones be put in the bottom and covered with dirt at once, when the digger can proceed to excavate another lineal rod, and grade the bottom with as much accuracy as it could be done were all the ditch excavated before any portion of it is stoned or tiled.

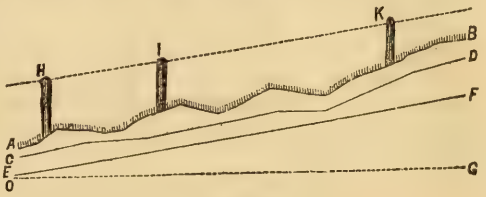


Fig. 2.

DITCHING PLOUGHS AND THEIR USE.

By employing strong teams and ploughs of proper construction, a vast amount of manual labor may be avoided. A steel mold-board plough with a sub-soil attachment is employed in many States both for ditching and pulverizing the soil, where the substratum needs to be broken up. In many instances it becomes necessary to put the weight of a man on the beam in order to make the plough enter the hard ground. A strong piece of plank is bolted to the underside of the beam, on which a man can stand. The plank also serves to prevent the plough from plunging down too deep in a soft place. By having a spar of wood bolted erect to the side of the beam, a person can ride a plough-beam without danger and with little fatigue. Where there are but few stones to obstruct a plough, a ditch can be sunk rapidly with such an instrument.

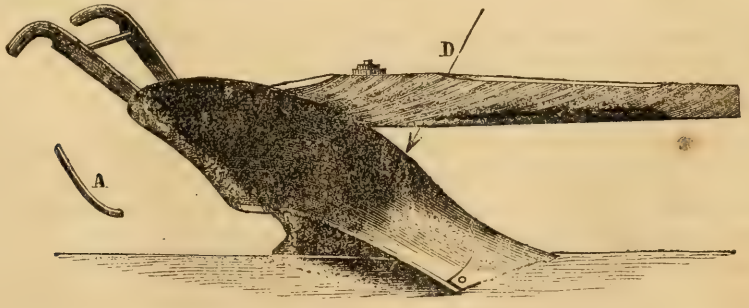


Fig. 3.

Fig. 3 represents the Iowa deep trench plough, which is so constructed that the entire furrow slice rises and slides up the inclined mold-board almost as high as the lower side of the beam before it is turned over. By driving twice or thrice in a furrow where it is desirable to make a ditch, if the substratum is not too stubborn and strong, such a plough will open a ditch thirty inches deep, which will only require a small amount of manual labor to grade the bottom for a course of tiles.

These ploughs are very large, strong, and heavy, weighing three or four hundred pounds. Three or four yokes of strong, heavy oxen are required to draw one satisfactorily. No part can be broken by any fair means. A gauge-wheel should be employed beneath the beam until the implement is required to enter its full depth, when the wheel may be removed and the plank-shoe substituted. Where there are many large boulders, or much hard-pan, such a plough would require more teams than could be made to draw advantageously in a line without much previous training.

The sub-soil plough proper, (Fig. 4,) is employed extensively, in sinking deep ditches, simply to turn up and pulverize the hard substratum in the bottom of a ditch, so that the earth may be thrown out with shovels. The standard consists of a plate of cast-iron nearly one inch thick, of the form shown by the cut. The share or point is made strong, so that it cannot be easily broken. The light-colored portion above the share represents a "throat-piece," which is subject to severe wear, and which can be easily renewed at an expense of a few cents. On the side of the standard a flange or kind of shelf is shown, which assists in elevating and pulverizing the sub-soil. When such a plough is drawn in a deep ditch, a chain from three to six

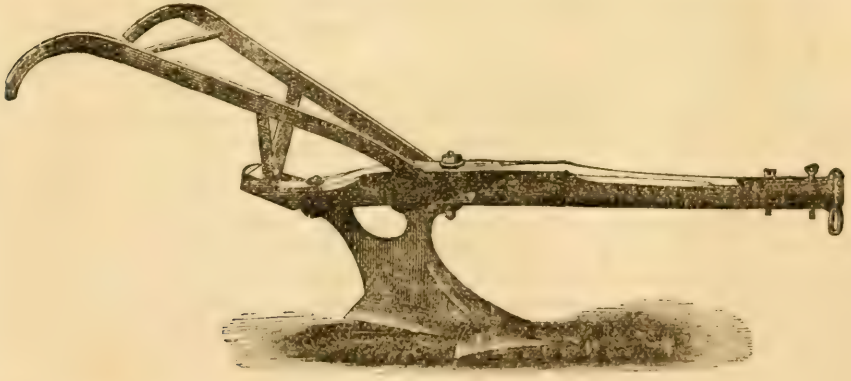


Fig 4.

feet long extends from the end of the beam to the whiffletree. If oxen are employed, the draught-chain is lengthened at pleasure.

About Reducing Bones.—Bones may be reduced to a pulverulent state, but not dissolved in unleached wood-ashes and lime. The ashes and bones should be placed in a box or cask in layers; the bones would be reduced more quickly if they were first broken; a little fresh lime may also be mixed with the bones. When the box is full, water may be poured on until the ashes are moist; they should not be so wet that any water leaches from them. If kept from freezing, the bones by spring will be easily broken to powder with the back of the shovel.

Reclaiming and Preserving Clay Soils.

As I am somewhat a beginner in agriculture, I beg to submit the following plan for reclaiming and preserving clay soils, with the view of having its merits and demerits brought out by the criticisms of more experienced farmers. I do not lay claim to much that is original, but present it as the result of my reading and study.

Clay soils, in this State at least, have not been *worn* out by a two constant tillage with no manure, but have been *scraped* out by three inch ploughing and surrendered to broom sedge. The vegetable matter, which constituted the virgin soil, has been worked out and dried out to the depth of the ploughing, and no measures have been taken either to restore it, or to bring up the fertilizing elements which lie deeper down. It would seem to be an easy matter to reclaim such soils, and far cheaper than to open new fields. Besides, it is simply robbing posterity to cut down any more trees until at least all the old cast-out fields have been thoroughly reclaimed.

To do this, select as much each year as can be well managed. In April break close and deep, with a good two-horse turn plough. Let the horses be strong, and do the work well. Sow broadcast one and a half or two bushels of cow peas to the acre, and plough in with long scooter plough. When the pea pods are getting well formed, roll with heavy roller, broadcast one thousand pounds of caustic lime per acre, and turn under with two-horse plough. Immediately sow another crop of peas to be again rolled and turned under by the middle of September. Follow the turn plough with a long narrow scooter for subsoil. As soon as this is done, sow a mixture of one and a half gallons of red clover, and one and a half bushels of orchard grass per acre. Or if clover alone, three gallons. Harrow lightly and roll, and in the spring top-dress with gypsum. Let the land remain in grass until September of the second year. Then give another dressing of lime, and turn under with two-horse plough followed by subsoil. Sow small grain.

Just after the grain in June haul on the stubble all the animal manure that has been made the past winter. Put it on thick, spread evenly and plough under. The first good season in July sow ruta baga turnips. Gather and bank as many of the turnips as will likely be of service during the winter, and feed off the rest to sheep. Fold the sheep and let them eat clean as they go. In the spring break well and plant cotton, manured with three hundred pounds of good phosphate to the acre.

Follow cotton with corn and peas, the former manured with cotton seed. Plant corn seven feet between the rows, and peas in the middle, as advised by Mr. Dickson. As soon as the corn is sufficiently dry, which will be by the first of October, if planted in April, let all hands gather. All the stock may be turned in for a few days. Cut down corn stalks, burn or plough under with plough large enough to do the work well, and seed again to clover and orchard grass. This ought to be accomplished by the 20th of October.

All the old fields being thus reclaimed, the plan points to the following rotation. Suppose the plantation to be divided into six equal, or nearly equal, fields:

	1st Field	2d Field	3d Field	4th Field	5th Field	6th Field
1st year	Clover	Clover	Cotton	Corn and Peas	Small Grain	Turnips
2d year	Clover	S. Grain	Corn & Ps.	Clover	Turnips	Cotton
3d year	S. Grain	Turnips	Clover	Clover	Cotton	Crn & Ps
4th year	Turnips	Cotton	Clover	S. Grain	Corn and Peas	Clover
5th year	Cotton	Corn & Ps.	S. Grain	Turnips	Clover	Clover
6th year	Corn and Peas	Clover	Turnips	Cotton	Clover	S. Grain
7th year	Clover	Clover	Cotton	Corn & Peas	Small Grain	Turnips

It will be seen that *sheep* and *grain* raising is contemplated as well as *cotton* raising. A mixed husbandry, by which alone can the planter be truly successful and independent.

If the fields are fifty acres each, there will be one hundred in grass, fifty in cotton, fifty in corn and peas, fifty in small grain, and fifty in turnips. This would support at least five hundred sheep and as many hogs, cattle and horses as would be wanted. These animals, with proper attention, would make a large amount of manure—enough to well manure the fifty acres in turnips. I would put it all on the turnips, except enough for barley and rye patches, because a luxuriant crop of turnips will bring a luxuriant crop of wool, and the sheep being folded on the land would leave it in splendid condition for cotton. I would not, however, neglect to manure cotton with about three hundred pounds of good phosphate, as the increased crop would amply repay cost and the supply of necessary mineral fertilizers will be kept in the land.

It seems to the writer that this system will insure large crops and keep the land in fine condition.

1st. Clover sod is the best manure for small grain.

2d. The clover being always limed before turning under, the soil is kept supplied with necessary ingredients of lime and humus.

3d. The turnip crop is heavily manured, not only because the manure comes at a good time in the rotation, but because a good *wool crop* is thereby insured.

4th. Cotton stalks being ploughed under and corn manured with cotton seed, restores to the land what was taken off the previous year.

5th. There are but two years in the six in which by clean culture (corn and cotton) the land is exposed to the drying process of the sun.

6th. One-sixth of the land is annually well manured with animal manure, one-sixth with mineral manure, one-sixth with cotton seed, and one-sixth with vegetable matter (clover) and lime.

7th. No crop is unmanured any year, except clover, which will not need special manuring after the rotation is established. But it must always be top-dressed with gypsum in the spring.

8th. The products will be wool, cotton, hay, corn, peas, wheat, oats, cattle, mutton, bacon, lard—plenty and independence.

Columbia, S. C. JAS. E. B——.

Steam-Power on the Plantation.

The general application of steam-power to farming is only a question of time. The steam engine will as surely supersede the mule and the horse, in all large planting operations, as it has in travelling. We only wait for the inventor to improve, adapt and cheapen it, and from the activity of the mechanical geniuses of this and other countries, in the direction of these desired ends, we are led to hope that we shall not have long to wait.

The tendency in this country is toward direct traction, as the surest road to the solution of the problems involved in steam-farming. There have been great difficulties to overcome, but they seem to be gradually disappearing, and if complete success has not been attained, we seem, at least, to be on the road to it.

Our frontispiece represents one of the Williamson Road and Field Steamers, turning up its broad "land" of straight furrows in fine style, on the Seed Farm of David Landreth, at Bloomsdale, Pa. Whether this is the coming champion in the field of steam-farming or not, we are not prepared to say, but it is certainly a step in the right direction, and, apparently, a success. This is what friend Paschell Morris says of its field work in his *Practical Farmer*, to which we are also indebted for the engraving:

After being uncoupled from the wagons, it was attached for a trial of ploughing to the Williamson gang plough, consisting of five secured to one frame. This latter, so light, strong and handy, is the result of three years' hard work, much patience and expense. It is made to contain six hard steel ploughs, each cutting a furrow twelve inches wide; and, as David Landreth informed the company, had on one occasion ploughed fourteen inches deep. The ordinary depth the steam plough has been worked at Bloomsdale is eight inches. On the way to the field the ploughs followed the steamer as readily as a two-wheeled cart. Not a moment was lost in getting to work. The field selected was an old tough sod, with a steep grade in the centre. The tripping of a lever by the fireman, which he performed from his station at the boiler, let the ploughs into the ground, and away rolled the steamer as straight as an arrow, with the tough sod furrows rolling over behind, like so many waves. The work seemed perfect, each furrow being mechanically correct, and alike in width and depth. At the ascent of the grade in the middle of the field, no diminished speed was observable, the power seeming so arbitrary and irresistable, that no ordinary field obstructions could have resisted its continuous progress. Arrived at the end of the field, the fireman pulled another rope, and out shot each one of the ploughs, the steamer spun around on one wheel, ran across the headland, and turning into a new land, was instantly at work on the return "*bout.*" There was no hitch, no slipping or backing, but a simple, silent triumph of good, sensible engineering.

We are thus particular in describing exactly what we saw, and was witnessed with surprise and pleasure by the whole company, because it *demonstrated* that the experiment of steam on the farm, and on the road, was successful in every point. Coming at a time when the farming business is unprofitable and requires reconstruction, this new invention will greatly supersede in some sections the labor of men and horses, will make more thorough ploughing and tillage, and will increase profits by economising time and labor.

Gleanings from Many Fields.

What Greeley Thought of Plaster.—In one of his last Agricultural Addresses, Horace Greeley gave his testimony in favor of land plaster (gypsum) as follows:

As to a Fertilizer, I place Gypsum or Plaster first on the list, without supposing it to be of equal value everywhere, or even of any value under all conceivable circumstances. And yet I doubt that a hill or dry plain can be found ten miles inland on which a first application of Plaster, to the extent of 200 pounds per acre, would not be repaid in the very next crop, more especially if that crop were Clover. Wherever Ground Plaster may be had for less than $20 per ton (as it can be in some parts of the Union,) I hold that each farmer who has not yet tried it should buy at least one ton, apply it to ten acres in strips of two rods' width, alternating with a like breadth left unsown, and carefully watch the result. If no benefit is realized, he may safely conclude—not the Plaster is a humbug—but that his land does not need it, or that he has not known how and when to apply it. In my own case, I judge that I have bought no other fertilizer that paid so amply and speedily as Plaster.

Potash as a Fertilizer.—Coleman's *Rural World* is credited as saying that potash forms one of the most essential constituents of a fertile soil, and one of the most important of all the fertilizing agents within reach of the agriculturist. In many plants it constitutes more than one-half of their ash, and in most at least one-third. In neutralizing acids in the soil and in the liberation of ammonia it acts in the same manner as lime; but when it is desired to simply effect these last mentioned objects, the latter should be used, as being cheaper; and potash, generally available in the form of ashes, should be applied as a manure, using the word in its strictest sense, to indicate a substance that contributes directly to the building up of the structure of the plants. But considerable care should be exercised in the use of ashes, and they should never, as is the practice with some in manuring corn in the hill, be mixed with guano or the refuse of the hen roost, inasmuch as the first rain that dissolves them will cause the potash to displace the ammonia in the same manner that lime displaces it from barnyard manure and similar manures, as we have just mentioned.

The Wise and Grand Economy of Nature.—Nature, amidst all her changes, is continually directing her resources towards the production and multiplication of life; and in the wise and grand economy of the whole system, even the agents that appear injurious to the hopes and destructive to the comforts of man are, in fact, ultimately connected with a more exalted state of his powers and condition. His industry is awakened, his activity kept alike, even by the defects of climates and seasons. By the accidents which interfere with his efforts he is made to exert his talents, to look further into futurity, and to consider the vegetable kingdom not as a secure and inalienable inheritance, spontaneously providing for his wants, but as a doubtful and insecure possession to be preserved only by labor, and extended and perfected by ingenuity.—*Davy's Elements of Agriculture.*

Degeneracy of Plants.—The facts that species of cultivated plants may be improved and new varieties formed by the selection of seed and that, by neglect, they just as surely degenerate, seem to have been known to the ancients, for Virgil says:

> I've seen the largest seeds, though sown with care,
> Degenerate unless the industrious hand
> Did yearly cull the best.

Applied Chemistry and Mineralogy.

All communications and notes of inquiry intended for this Department, as well as specimens of soils, fertilizers and minerals for analysis or description, should be addressed to Charles U. Shepard, Jr., M. D., No. 20 Broad street, Charleston, S. C.

Soils—IV.

CHEMICAL ANALYSES OF THE SEA ISLAND COTTON SOIL.

The soil under examination was obtained from J. Jenkins Mikel, Esq., and is the same as that subjected to the mechanical analysis, whose results have been already published. The analysis marked with S. was executed by the writer, with the aid of *hot* hydrochloric (muriatic) acid. That marked with A. was made by Mr. D. C. Anderson, and represents the composition of the *cold* hydrochloric acid extract.

Sea Island Cotton Soil	S. Soil analyzed as received.	A. Soil analyzed when air-dry.
	p. c.	*p. c.*
Moisture, i. e., loss at 125° C.	0.97	0.78
Organic matter, i. e., loss at low red heat	2.476*	2.95†
Fixed ingredients	96.554	96.27
Total	100.000	100.000

The air-dried soil subjected to the methods of analysis laid down by Dr. Emil Wolff, the eminent chief of the Hohenheim Academy for Agriculturists and Forresters, and recommended by the Association of German Agricultural Chemists, afforded the following results:

Ingredients of Sea Island Cotton soil, previously air-dried.	As determined from the hot hydrochloric acid solution. *S.*		As determined from the cold hydrochloric acid solution. *A.*	
	p. c.	*p. c.*	*p. c.*	*p. c.*
Matter insoluble in acid, almost pure sand		92.48		
Acid extract. Phosphoric Acid	0.095		0.084	
Sulphuric Acid	0.070		0.074	
Lime	0.892		0.880	
Magnesia	traces.		0.050	
Iron (oxides) and alumina	2.490		1.810	
Soda	0.200		not determined.	
Potash			0.036	
Silica	0.425		0.074	
Carbonic Acid	0.420		0.480	
Total soluble in acid		4.592		3.488
Organic matter, moisture and undetermined ingredients dissolved by hydrochloric acid		2.928		
Total		100.00		

By comparing the above results it may be seen that the treatment with *cold* hydrochloric acid is sufficient to dissolve the greater part of the more important ingredients of plant-food in this soil. It will also be observed that the amount of

*Containing Nitrogen 0.087 *p. c.* †Containing Nitrogen 0.096 *p. c.*

pure sand is over 90 percentum, which result was anticipated by the mechanical analysis of the same soil. The comparatively large amount of sand and the well known fertility of this soil appear incompatible. It is possible, however, that the fine earth of the soil under investigation is of such richness and in such a state of comminution, that it can readily support vegetable growth, especially under the high system of cultivation practised on these islands.

The comparatively large amounts of lime and carbonic acid in the analysis, are probably due to the presence of fragmentary sea shells, previously alluded to. In connection with the consideration of the sea island cotton soil, it seemed desirable to investigate the slime from the neighboring brackish water creeks, which in olden times was used to so great advantage as a fertilizer for these fields. The slime, whose composition is given below, was carefully gathered by Mr. J. A. Hume from a creek bottom, running dry at low water, in the vicinity of Bull River, and yet sufficiently removed from the phosphatic deposits of that locality. The analysis was carefully executed by Mr. Anderson; the extraction of the dry slime being made with cold hydrochloric acid. Owing to the lack of time sufficient to thoroughly air-dry the sample for chemical analysis, it was deemed necessary to submit the slime dried at 100° *c.* (the temperature of boiling water) to analysis.

The composition of the *slime* as it was received, in its wet condition, was found to be:

Composition of slime from the bottom of a brackish water creek.

	p. c.
Water, expelled by air-drying	58.33
Organic matter, with hygroscopic water, expelled at a low red-heat	15.60
Fixed ingredients	26.07
Total	100.00

Slime, dried at 100° C., containing the following ingredients:		*p. c.*	*p. c.*
Ingredients, almost pure sand, insoluble in cold muriatic acid			88.07
Ingredients soluble in cold hydrochloric acid.	Phosphoric acid	0.043	
	Sulphuric "	0.050	
	Silicic "	0.135	
	Lime	0.487	
	Magnesia	0.348	
	Alumina	0.748	
	Sesquioxide of iron	2.244	
	Manganese	0.160	
	Potash	0.254	
	Soda	0.251	
	Other undetermined fixed ingredients, with organic matter containing 0.185 *p. c.* of nitrogen	7.210	
Ingredients soluble in acid			11.93
Total			100.00

The writer is led, in view of the above analysis, to ascribe the advantageous results from the application of this slime to sandy cotton lands, rather to the extreme fineness of its subdivision than to any great richness of composition. Since, with the exception of the moderate amounts of nitrogenous organic matter and of alkaline salts, the valuable ingredients of plant-food appear to be present in only small quantities. The fineness of the slime, however, would enable the growing plant to make much better use of it than of a, perhaps, richer material, but one

whose nutrition was locked up in coarse, mineral combinations, more or less inaccessible to the plant.

The writer hopes to present, in the next number of this Journal, an analysis of the salt-marsh mud from this coast, which, as many of the readers are aware, was extensively used as a means of revivifying exhausted sea-island cotton and other soils in this region. It will, however, be interesting at this point to examine the analytical results of a few investigations of those natural fertilizers, which, in origin and effect, are more or less similar to the slime previously given. The fertility of certain lands renowned for their productiveness—forming, as it were, the garden spots of the earth—is often directly attributable to the yearly deposit of slime from the overflowing waters of some passing river. Such is pre-eminently the case with the valley of the Nile, where the progress of the deposition since historic times can be plainly discerned by the gradual burial of the ancient monuments of Egypt. The analysis of the Nile slime, by A. W Hofmann, is accompanied by the analyses of that from the river Chemnitz, by Siegert, and the river Loire, by Bobierre, (Knop. Agricultur-Chemie, II. 164.) These sediments deserve particular attention, not only from the manner of their distribution over the surface of the soil, and from their favorable physical and chemical condition, but also from the wonderful success with which agricultural industry is crowned in the countries and lands thus happily replenished.

Essential ingredients of the air-dried sediments.	Slime from Nile.	Slime from Chemnitz.	Slime from Loire.
	p. c.	*p. c.*	*p. c.*
Organic matter	5.701	23.000	10.5
Phosphoric acid	——— *	0.21	———†
Sulphuric acid	0.144	0.29	———†
Coarse and fine silica	54.585	66.56	86.0
Lime	1.912	0.31	1.50
Magnesia	0.762	——— *	
Potash	0.473	0.75	
Soda	0.553	0.10	
Nitrogen in the organic matter	———†	———†	0.0043

In connection with the consideration of these original fertilizers, which are transported and deposited by natural processes, the attention is called to those sediments at the outlets of rivers, or in shallow bays, which have been excavated to the end of being used as natural manures. Of the analyses given below, Nos. 1 and 2 represent respectively mud brought up from the bottom of the harbors of Toulon and Rochefort, in about 28 feet of water, (*Galaxy*, June 1872;) No. 3 is the analysis of the air-dried sea mud from the outlets of rivers on the coast of France, by Pierre; (this mud is used in France for manurial purposes, under the name of Tangues, Cendre de Mer, etc.; No. 4 is the analysis by J. Th. Herapath, of an air-dried sea-sand from the coast of Devonshire, which has been used as a fertilizer, (Knop. Agricultur-Chemie.)

*In traces too small for quantitative determination. †Not determined.

Ingredients of slime, mud, &c:	1. p. c.	2. p. c.	3. p. c.	4. p. c.
Water	56.18	49.62		
Nitrogenous organic matter	7.20	8.11		2.42
Phosphate of Lime	*a*	*b*	0.17 to 3.01	0.025
Carbonate of Lime	14.99	18.38	23.00 to 53.00	47.438
Sulphate of Lime			0.04 to 1.42	
Salts of Magnesia	trace.	0.46	0.07 to 1.46	0.097
Chloride of Sodium, (common salt)	1.34	0.88	soda and potash	
Alumina and Oxide of Iron	0.90	1.14	0.02 to 1.13	
Nitrate of Potash	trace.			
Silica and Silicates	19.31	11.08		18.76
Nitrogen in Organic Matter			0.16 to 1.62	

By glancing at the above tables it can be readily observed how widely different these natural fertilizers are from the artificial commercial manures of the day. The quantity of essential plant-food is seen to be small in most of them, and in some only to the extent of undeterminable traces. To compensate for the apparent deficiency in the relative amount of plant-food in these articles, the condition appears to be very well adapted for its utilization. Again the large application of these comparatively weak manures makes up for their less value. The samples of mud from the bottom of the harbors of Toulon and Rochefort present a large percentage of valuable lime salts, as also of organic matter, and appear to be a mixture of the drainage of the adjacent cities with a soft calcareous bottom. Less rich than these, but exceedingly valuable if furnished at a cheap rate, is the marl whose analysis is given under 3; containing, when dry, a large amount of carbonate of lime, in addition to nitrogeneous organic matter, alkaline salts, &c. Similar, but less valuable, is the English sea-sand.

It will be noted that the two last are equalled, if not surpassed, by the slime from the Carolina coast in the percentage of many of the indispensable ingredients of plant-food; while, on the other hand, the amount of sand in this slime from the sluggish, brackish-water creeks is very large. S.

Laboratory for Analytical Chemistry, No. 20 Broad street, Charleston, S. C.

a Phosphate of Lime being present in larger proportion than either the carbonate or the sulphate.

b Between the carbonate and sulphate of lime in quantity.

Horticulture and Rural Adornment.

Horticultural Hints for February.

Though classed as a winter month, February has here, and especially in the coast region south of latitude 32°, many of the characteristics of spring. The verdure freshens in the fields, the leaf-buds swell on the trees, the peach bursts into bloom, the fragrance of the yellow jessamine fills the borders of the woodlands, and the red bird and the sparrow greet us with song in thicket and hedge-row. But frosts are still to be expected, whenever the North winds bring us reminders of the season from the snow-clad hills of less favored regions. In the lower South, the last part of the month is generally very mild, and severe freezes are rarely experienced. Further North, and especially in the elevated parts of the upper country, the month is more chary of her vernal favors, and frosts are more frequent and severe. Throughout the coast region, north-east winds and cold rains are frequent. All these facts should be borne in mind in planning our gardening operations. Where January plantings may have failed on account of cold, or from any other cause, February is likely to present more favorable conditions. In any event, all unfinished or fruitless work of the last month will now be first in order to be completed or renewed, as the case may be. Earthing up celery, tying endive, forking over asparagus beds, pruning grape vines, getting hot beds under way, stirring the ground around the raspberry plants, (being careful not to injure the roots,) and pruning the canes closely, weeding strawberry beds, and lightly loosening the earth with a pronged hoe, are among the operations which must not be delayed.

———Beets, Carrots and Parsnips may be put in for the main crop (in this latitude) from the middle to the last of this month, (next month in the middle and upper country;) also Salsify, Swiss Chard, Cress, Mustard, Kohl-Rabi, etc., Lettuce, Radishes and Turnips for a succession may be put in any time during the month. Sugar corn may be tried here toward the last of the month, but the main crop should be deferred till March. Cabbage Plants should be set out at various times during the month; and, as they begin to grow, the soil should be frequently stirred. Tomatoes and other tender plants may be started in a hot-bed or a cold frame. If one is disposed to take the trouble to protect them, a few hills of cucumbers, squashes and mellons may be planted. Bottomless boxes, fifteen inches square, and six or seven inches high, covered with oiled cotton cloth, serve admirably for this purpose and cost little. After the plants come up, the boxes must be lifted off, or raised at one side in pleasant weather, to admit the air.

———In the latitude of Charleston, garden peas are planted with the best results from the twentieth of December to the middle of January, but they may be put in any time during the present month to keep up a succession. A little further North, this is a good time to plant the main crop. Hoe frequently those that are advanced and set sticks for their support. Even the dwarfest kinds do better in

that way. We have recommended to plant pretty thickly, but there may be a question what is to be considered thick planting. Well, for the dwarf kinds one pint of seed, to from fifty to sixty feet of double row. Of the large growing kinds a pint of seed should plant from eighty to one hundred feet of double row. Let the distance apart of the rows be about equal to the height the peas are expected to grow, whether it be one, two, three or four feet.

———Irish Potatoes are doubtless already planted in most cases, but they are still in season and if put in at once may make as good crops as those planted earlier. Choose, if possible, a good, black, moist, but not wet soil, and manure liberally, avoiding, however, too much crude stable manure if you desire tubers of the best quality. Wood ashes, chip manure, rotten saw-dust, and the scrapings of the house-yard, are excellent for this crop. The Early Rose is the best variety, so far as our experience goes—in fact it is so much better than any other, that we would not accept as a gift, for planting, any of the older kinds, good as some of them are. The Peerless is said to be an excellent and very productive variety and to be suited to our climate, but we have not tried it.

———In the flower garden there is plenty of work to be done; Lily and Gladiolus bulbs should be planted, and, toward the last of the month, the seeds of hardy perennials and annuals. Half-hardy and tender annuals may be sown under glass, to be transplanted when the weather becomes warm. Perennial plants of last season's growth may now be transplanted, dividing them in such cases as permit this mode of multiplying specimens. Many of the early flowering bulboons plants will now be in bloom, and they should be carefully attended to and tied up to neat stakes, when necessary. Always cut off the flower stems as soon as the flowers have withered, and in many cases a second stalk will spring up and bloom.

———This is a good time to strike cuttings of herbaceous plants, such as geraniums heliotropes, salvias and coleus. Of these, young or unripened wood should always be taken; but it must not be too soft. When a shoot will break, on the upper part, on being bent, it will not be far from the proper stage of growth. The cuttings may be from two to three inches in length and the leaves must be removed (cutting them close to the stem) from the part to be inserted in the soil. Use a pointed stick for inserting them, and if set in pots, place them near the sides.

———An excellent contrivance for striking cuttings, where one has neither green-house nor hot-bed, is a box with a few inches of soil in the bottom and covered with a pane of glass. Plant the cuttings in small pots in a soil composed of at least half sand and "plunge" them partially in the earth within the box, which, being kept moist, helps to keep the air from getting too dry. Avoid too copious waterings, or the cuttings will "damp off." Coleuses, Begonias, Heliotropes, and Salvias, as well as Geraniums, Verbenas and Petunias, may be propagated in this way.

———Now is the time to cut back the long shoots of the peach. This process has a tendency to check the flow of sap and retard the opening of the flower buds, often saving a crop from late frost. Apple and pear trees may also be pruned and

toward the last of the month grafting will be in order for the apple, pear and plum. If you have any trees or shrubs to transplant, do not delay, as it will soon be too late.

———If insects of any kind trouble you in the garden, orchard or elsewhere, send specimens to our Entomologist, Mr. Chas. R. Dodge, Washington, D. C., with notes of inquiry or information. A wooden match-box is one of the best things to send them in. Do not send them to us, in Charleston, as some have heretofore done, but directly to Mr. Dodge, as that will save trouble and expense.

Grapes and Grape Culture.

There seems to be a belief in some quarters, among its cultivators, that grape-growing will be overdone, and that it will not be many years before grapes will bring so low a price as to become less profitable than grain; but I think there need yet be no fear of such a state of affairs, for, in the first place, all localities are not suited to the successful growth of this fruit, either the climate or soil being unfavorable, or else the great distance from market, or inadequate means of transportation interposes difficulties; secondly, many who rush into this speciality, do so with but a vague idea of the difficulties which constantly present themselves, and when such is the case, the former enthusiastic planters become discouraged, neglect their vineyards in consequence, and the end is the vines are dug up in disgust, and the ground allotted to some more profitable crop. I have known many cases like the above, some of them quite extensive, and as the numbers, in the aggregate, is quite large, they will serve to prevent excessive production, the thing greatly feared by the American public generally, no matter what trade or profession we choose to take.

Grape culture, to be remunerative, requires experienced views from the beginning, and although a novice might glean much valuable information from a treatise on the subject, yet one season in the employ of a good vintner would develop more practical facts than a score of volumes on grapes, from the simple fact that many little points are accidentally or unavoidably overlooked by the authors, and as often these apparently trivial matters are of great importance, a practical insight is preferable to a theoretical view.

I do not advocate the discarding of treatises by reliable authors, but rather would have them read oftener, and by more persons than take the trouble to do so now. What I want to impress upon the would-be-grape culturist is this: if you have any opportunity to do so, serve an apprenticeship for one or two seasons, and then, with your books, you will be better able to work understandingly, otherwise you will be feeling your way, often at quite an expense.

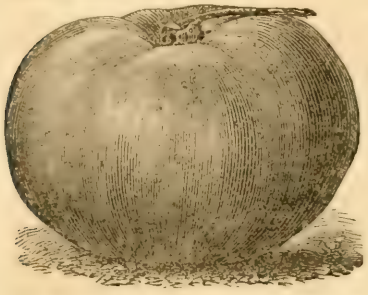
At some future time I may have an opportunity to give a series of articles on grape culture, giving an account of our failures and success, but my time is so taken up with many operations necessary on a large fruit farm, prominent among which is making packages for peas, grapes, etc., that I can now only *promise.*

If there are any who would like to make inquiries coming under this head, I shall be pleased to answer them through the columns of this paper,

Chesapeake City, Md. D. Z. EVANS, Jr.

Canada Victor Tomato.

Mr. Jas. J. H. Gregory, the great Marblehead (Mass.) seedsman is sending out seeds of a new early tomato with the foregoing name, of which he gives the following account:



Last season a gentleman residing in Canada sent me a glowing description of a new tomato. I wrote asking for a pinch of seed that I might test it in my experimental garden. About the time the plants were put out, left for Europe; when I returned my foreman called my special attention to this new tomato, which *had ripened its fruit several days earlier than any other kind of the twenty-five varieties I was growing scattered over my different farms.* On examining the new sort I saw at a glance that here was a decided acquisition. The fruit was not only the earliest of all, but of large size and exceedingly symmetrical and handsome, while in ripening it had no green left around the stem, a great fault with many kinds, otherwise good. The fruit was heavy, full meated and rich between round and oval in shape, and red in color; it was distributed very evenly on the vines.

Do not Neglect the Flower Garden.

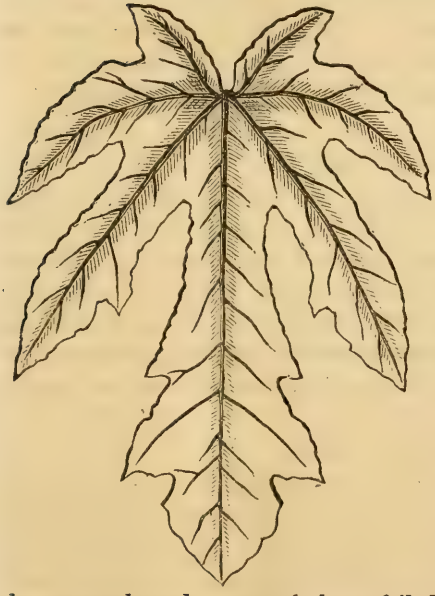
No farmer's home should be destitute of a flower garden. It pays, as everything which makes a home pleasant and beautiful, always does. To have a flower garden does not involve a heavy investment of capital, or any material diversion of labor from the cotton and corn. A few hours' work with the wheelbarrow, the spade and the rake will put the flower beds in order, when the ladies and children of the family can do the rest, and find health and pleasure in the exercise and the exposure to the invigorating sunlight which it will afford. Do not say, then, that you are too poor to adorn your homestead, or too busy to attend to crops which have no money value. If you cannot buy a few packages of seeds, some kind neighbor will cheerfully give you some. It is not necessary that you have rare and expensive plants, though these are, of course, desirable where means and leisure, combined with the necessary skill, permit their cultivation. Plants and flowers do not cease to be beautiful, as they become common and lose their novelty. The Asters, the Balsams, the Petunias and the Verbenas, though old and within the reach of everybody, are still among our best flowers; and it requires neither great skill nor high erudition to cultivate them.

A year ago, (February number, 1872,) we gave a descriptive list of some of the most desirable annual, biennial and perennial flowering plants for the Southern garden. We need not reprint that list, as we hope most of our readers have kept all their back numbers, and can refer to it if they care to do so. We will here merely mention a few things which almost everybody may, and should have, because they are at the same time beautiful and easy to grow, requiring no special prepara-

tion of soil and no difficult process in their propagation and cultivation. Add, then, to the kinds mentioned in the foregoing paragraph, Sweet Alyssum, Caliopsis, Candytuff Carnation, Cypress Vine, Globe Amaranth, Larkspur, Pansy, Phlox, (Drummond's,) Portulacca, Pink, Poppy, Scabiosa, Stocks, Salvia, Sweet William, Thunbergia and Zinnia. Of these, Caliopsis, Larkspur, Sweet Alyssum, Pansy, Pink, Poppy, Scabiosa, Stocks, Sweet Williams and Phlox, might advantageously have been planted in October, but all except, perhaps, Poppy, Pansy and Larkspur will succeed, if planted in February or March. Try some or all of these, and such others as you fancy.

Seasonable Orchard and Garden Notes.

The White Smyrna Fig.



Last spring, we received from the great fig District of Aiden, Asia Minor, through Mr. Smithson, United States Consul, at Smyrna, some cuttings of the variety there principally used for drying, and known in commerce as the Smyrna Fig. This may be some variety already well known in this country under some other name, or it may be a kind not hitherto cultivated here. This direct importation of cuttings will, at least, settle this question, and we shall know exactly what fig is found most desirable for drying in Asia Minor. We distributed the larger part of the cuttings, and planted the rest in our garden. Owing to the lateness of the season when they were received, and the severe drought which commenced soon after they were planted, many of them failed, but we have a number of well rooted plants, from some of which we may get fruit this season. Our cut represents the form of the leaf, which is similar, if not identical, with that of the White Genoa, which variety it may prove to be, but we can not be sure till we get the matured fruit. We have no more plants to distribute this season, having already sent out all we can spare.

Liquid Manure for Strawberries.

An English gardener has been very successful with his strawberry crop for several years on the same bed, and attributes the abundance and size of his fruit to the use of a liquid manure, composed of one pound each of Epsom salts, Glauber's salt, pearl ash and carbonate of soda, and one-half pound of muriate of ammonia to sixty gallons of water. He applies this manure as soon as the plants show signs of growth in spring, watering them pretty freely without a hose, three times, at

intervals of about a week, so as to finish before they come into flower; and, if the season be dry, he finds it absolutely necessary to supply them liberally with common water afterward during their whole time of growth, or their increased activity, he thinks, would very quickly kill them.

The New Lily, Lilium Leichtlinii.

The origin of this lily is unknown. Messrs. Veitch & Sons, the well known English nurserymen, found a bulb of it among some *L. auratums*, which they received from Japan a few years since, and J. D. Hooker, Curator of the Kew Gardens, named it after Max Leichtlin, of Carlsruhe, a gentleman who has paid especial attention to the introduction and cultivation of lilies. This new lily resembles, in some respects, the common Tiger Lily in the form of the flower, but differs from it not only in the color but graceful habit of the plant. The flowers are solitary but numerous, four inches in diameter, nodding, bright, light golden or lemon yellow, spotted or blotched with maroon. The bulbs appear to be perfectly hardy, and the plant altogether a vigorous grower and profuse bloomer. This lily bloomed for the first time in this country last summer, on the grounds of Mr. C. L. Alen, near Brooklyn, N. Y.

Charcoal for Potted Plants.

A top-dressing of powdered charcoal is one of the best applications to house plants of all kinds. It is a wonderful absorbent, and either through this quality alone, or for some other not well understood reason, is one of the most powerful stimulants to vegetable growth of which we have knowledge. Before we undertook to find out the chemical wants of plants and supply them, charcoal and its value in agriculture were well known. It was supposed to act by absorbing ammonia from the air, and yielding it to rain water, to carbonic acid generated in the soil, and to the rootlets of plants.

A Superior Seedling Orange.

The new Seedling Orange, grown by Mr. C. F. Powell, Picolata, Florida, is, we think, the finest flavored we have ever tasted, and demonstrates the fact that this fruit is susceptible of improvement as well as other species. It is often said that the orange comes true from seed, but this is correct only in a general way. There are frequent variations, and by taking advantage of them we shall be able to reach a degree of excellence not yet anywhere attained.

Horticultural Excerpts and Comments.

Raspberries in the Shade.—In 1863, I planted two rows of raspberries about sixty feet long, and three feet apart, in the rows directly west from a two-story building, and under the north side of a tight board fence, so that they got no sun till afternoon, and not more than two or three hours of any day; and from that plantation we have picked two bushels in a season of Red Antwerps and Brinckle's Orange, that were the admiration of our neighbors. The finest Black Caps I ever raised were directly under the north side of a high barn. I raised a full crop of strawberries—Russell's—in the same location, and thus

lengthened out the strawberry season, as they ripened a week later than those that had the full benefit of the sun.

Thus writes a correspondent of the *Fruit Recorder*, and the facts stated are worthy of special consideration here in the South, where the raspberry is so liable to suffer from exposure to the full blaze of our summer sun. Our own experience fully confirms his observations, so far as this fruit is concerned, and we always plant our raspberries on the north and east sides of fences, where they are shaded during a part of the day.

Malaga Grapes in the Open Ground.—The *South-Land* notes the growth of some fine Malaga Grapes grown on a garden arbor, near Independence Station, Jackson Railway, and adds, that from this and many similar facts, we can scarcely doubt the Malaga Grape, (and perhaps other foreign sorts,) may be raised successfully and profitably at many places in the Gulf States—especially near the sea—and we advise our readers to try the experiment of grafting on hardy native sorts—layering the bearing shoots for the production of new roots. The Malagas and other solid fleshed grapes, of foreign origin, command three or four times the price of our best natives, and are well worth a little care and trouble.

Such cases may be exceptional, but we are inclined to think that the exceptions might be made very numerous, were the foreign grapes tried more frequently, especially in the coast regions of the Atlantic and Gulf States. A fair crop of very fine Malaga (Muscat of Alexandria) grapes, is grown yearly in the garden of an Italian gentleman in this city, and we have known several other instances of success with other varieties of the *Vitis vinifera* in this latitude and southward, especially in Florida.

A New Bush Strawberry.—A correspondent of the *Maryland Farmer* translates from the French a description of a wonderful "inexhaustible" strawberry bush, "invented" by M. Mabille, of Limoges, France. This strawberry bush must be planted from March to May in the spring; or in September, October and November, in the fall. When planted in the spring, it begins to give some fruit as early as June or July, and the production continues until frost. When planted in the fall, it gives fruit next spring. In both cases it is really abundant only the second year, *i. e.* the one following the year of its planting. Then flowers and fruits succeed each other without interruption. Besides this, we must add that this strawberry bush is one of the earliest we know. Well cultivated, strong plants, will yield sometimes 170 and 180 berries.

M. Mabille sells the plants of his wonderful invention in the horticultural line for ten francs (two dollars) per hundred. Cheap enough!

Baiting the Cut-Worm.—It appears that D. Boynton, of Belton, Michigan, has found a bait by which he decoys the cut-worms to their destruction. He tried the remedy in his plantation of tomatoes. Balls or wads of freshly mowed clover leaves, about the size of an apple, were placed over the ground. The worms collected in the clover wads in great numbers, and were killed by pouring on (not merely hot but) boiling water. In some rare cases, seventy or eighty worms were found in one clover ball. He has in this way killed 15,000 cut-worms.

Those who can get the fresh clover, (and, perhaps, the worms might be baited with something else just as well,) will soon have an opportunity to try this plan.

PATRONS OF HUSBANDRY AND AGRICULTURAL SOCIETIES.

The State Agricultural Society and its Late Fair.

There is no object of an earthly nature dearer to our heart, than the advancement of the material interests of South Carolina. We have watched with much solicitude the progress of every enterprise undertaken for this purpose.

From the various immigration schemes started since the war, we hoped for much. And when these schemes culminated in that large, imposing, and enthusiastic Immigration. Convention which assembled in Charleston a few years ago, we thought surely some substantial good would result. They have all vanished "like the baseless fabric of a vision."

We had still higher hopes of the success of the "Agricultural and Mechanical Association." We believed the organization of this Society vitally important to the material development of our State—that it would tend, as no other agency could, to stimulate and diversify our industrial pursuits.

So far, it has totally failed, not because such an institution is not needed, not because of its unfitness to accomplish great good to the State, but because, as we believe, of its perversion from its legitimate purposes into a means of debauching and corrupting the people of the State.

The late State Fair was a disgrace to any moral, not to say Christian, community. Horse-racing was its prominent feature, and let the visitor turn in what direction he might, he was sure to come in contact with "gambling and drinking establishments, and an army of tricksters and cheats," that everywhere covered the grounds.

If these things are to continue, we suggest the name of the Association be changed to "Society for the Promotion of Horse-racing, Drunkenness and Gambling in South Carolina."

We know the fact that many good farmers and other citizens declined to exhibit articles, or even visit the late Fair, on account of the prominence given to horse-racing in the Premium List.

But cannot all this be changed? We sincerely hope so. Real "progress and improvement are the words we would whisper into the ears of our new officers." Away with these "ugly blotches, sore and disagreeable excrescences." Let the bar sinister be removed from the bright escutcheon of the Society," and it will be cherished and supported by our people. Otherwise, it will not, and ought not.

Hereafter, we may venture some suggestions for the improvement of our Annual Fairs, by giving more prominence to the agricultural feature.

We rejoice that in the RURAL CAROLINIAN we have a real first-class Agricultural Journal. We cannot overestimate its value to the farming community. It richly deserves the most extended patronage. It should be taken by every family in South Carolina. We could tell you, Mr. Editor, wherein through information derived from its pages, we have been the gainer in actual dollars, to more than the price of subscription for forty years to come, should we live and take it that long.

November, 1872. LITTLE JOHN.

We give place to our correspondent's rather severe criticisms, (intended for an earlier number,) with the hope that they will call renewed attention to a growing evil, which we believe is not peculiar to our fairs or to our State. But has he gone to the root of the evil? Why have horse-racing, tournaments, side shows and other illegitimate exhibitions been encouraged at fairs? Has it not been because the people have shown so little interest in mere agricultural and mechanical expositions, that fairs confined to their proper objects will not pay? The funds must come mainly from the sale of tickets, and does not the racing, &c., sell the tickets? We should be glad to believe that the ploughing match, the fine stock, the improved implements and the big turnips, would attract as many without these objectionable concomitants, but we fear the supply in this case, as in most others, indicates a previous demand. If public opinion is right, the Society cannot long go wrong.—Ed.

The Order of Patrons of Husbandry—its Clouds and its Sunshine.

I am a member of this Order, I believe in it, and I believe that we will eventually not only hold the plough, but we will have hold of the wheel that steers the ship. In thickly populated sections everything works easily, but in sparsely settled districts, the difficulty seems to be to make the meetings of the Granges interesting, until the members begin to feel the advantages of organization.

There is no limit to the number of those who can chop logic without intermission. So long as the boat is a new thing to them, they can row like puppet automatons, and puff out their cheeks till they resemble the common wood-cuts of Boreas. But the matter isn't sufficiently lively; they prefer playing tender until the ship is well out of harbor. At the last landing they will be ready to jump aboard, and then "how nicely we navigated out;" they are clouds on the otherwise bright horizon.

It seems that any one should know enough about his own business to be able to judge whether he can spare a few hours for a monthly meeting or not. If his time be so precious that he cannot attend, then he is independent of the benefit or honors that may be distributed by the Order, and should withdraw; sleeping partners are a drag; they do no good.

Again we say, make the meetings interesting, especially to the lady patronesses, as they make them pleasant to us. Directly, they get no benefit; indirectly they may, possibly. But, setting aside the question of remuneration, I think they should have an equivalent for the *sunshine* they bring. The originators of the Order overlooked one important item of success, in forgetting to furnish an equivalent for the sunshine. But 'tis to be hoped that an occasional ray will find its way into the different Granges notwithstanding. Does not every sturdy farmer remember the time when the most dreary days were made bright by the chippering of the knitting needles at times, as the garden was made, the out-house erected, or the rails split. Every blow told, because sunshine was there. Ladies, we beg of you, do not imagine that your presence is not necessary, because you are not asked to shovel away at the levelling of the mountain, but pray give us the sunshine.

I think the sunshiny side of the Grange may be called the patrons, or patterns of *industry;* if I may be allowed to say why, I will:

Kitty, (wife,) who is a member, brought home an embryo regalia, (dainty little flap for apron and sash,) she commenced operations by making a labyrinthine puzzle with red braid, something resembling the appearance that several fence worms tangled together, and well tied with jessamine vines, would have. Our colloquy was something in this wise—sewing machine, Kitty? No, sowing machine can't do it. Mark with red crayon? No, not in order, make fun of it—do hush? How many bunches of braid? Let's see—one, two, three, four, pieces. Do stop, resign, send word you've got sore finger, you're sick, you're dead. Nev-er. And the mile or less of red tape was *labyrinthined* on, and, not only that, but at the next meeting of the Grange, about a dozen duplicates were exhibited, showing the same frightful consumption and contortions of red braid. As there were absentees, it may be possible that some sacrificed themselves on the alter of duty, to red braid. At any rate, I think they may well claim the appellation, as it was ascertained soon after, that not only our vicinity was bankrupt in red braid, but Charleston also, and a heavy requisition made on N. Y. beside. Now if any one is incredulous, and wishes to be personally satisfied, let him join the Patrons and pay his five dollars, which will go toward filling the vacancies in the treasury occasioned by the red braid mania.

A PATRON OF OUR GRANGE.

The Agricultural Society of South Carolina.

The Annual Meeting of this old and honorable body, took place in Charleston, Thursday evening, January 9th, and passed off in the most satisfactory manner to all concerned. After the election of officers, and the transaction of the necessary business, the meeting adjourned to the bountifully supplied supper table, where the merits of the choicest viands which our markets afford, were thoroughly discussed, and several excellent impromptu speeches fittingly closed the exercises of the evening.

State Grange of South Carolina.

The State Grange, Patrons of Husbandry, convened in Columbia on Wednesday, the 15th ult., and continued in session two days, transacting a great deal of very important business, most of which, however, was of a nature not to permit publicity. The best and most fraternal feeling prevailed, and a disposition to take hold of the actual work before the Order in earnest was manifested. Reports from all parts of the State in regard to the progress and successful working of the Order were in the highest degree encouraging. New Granges are constantly being organized, and older ones are perfecting themselves in the work. The State Grange is composed of the best materials South Carolina affords, in point of intelligence, character and social standing. If a finer body of men has ever assembled here or elsewhere, it

has not been our privilege to see it. Such men, with such an organization as they possess, and such obligations as bind them together, cannot fail to carry out the beneficent work they have undertaken, thereby promoting the progress of agriculture, the well-being of the agriculturist, and the prosperity of the State.

Meeting of the National Grange.

The National Grange Patrons of Husbandry closed its Sixth Annual Session on the 11th ult., after the transaction of a great amount of important business, including the election of officers. The meeting was an entirely harmonious one, the most cordial and fraternal feeling being manifested by the members from the different parts of the Union—North and South, East and West—working together for the good of all, without a single jar or discord. We learn from the Report of the Worthy Secretary, that the Order now embraces 1,362 Subordinate Granges. Of these, Iowa has 754. South Carolina stands second on the list, having on record at the time of the meeting, 102 Subordinate Granges. Mississippi has 61 Subordinate Granges. Three Granges have been organized in Canada. The officers of the National Grange, elected for the ensuing three years are as follows:

Worthy Master—Dudley W. Adams, Iowa.
Overseer—Thos. Taylor, South Carolina.
Lecturer—T. A. Thompson, Minnesota.
Steward—A. J. Vaughan, Mississippi.
Assistant Steward—G. W. Thompson, New Jersey.
Chaplain—A. B. Grosh, District of Columbia.
Treasurer—F. M. McDowell, New York.
Secretary—O. H. Kelley, District of Columbia.
Gatekeeper—O. Dinwiddie, Indiana.
Ceres—Sister Adams, Iowa.
Pomona—Sister Kelley, District of Columbia.
Flora—Sister Abbott, Iowa.
Lady Assistant Steward—Sister Hall, District of Columbia.
Executive Committee—Wm. Saunders. D. C., D. W. Aiken, S. C., E. R. Shankland, Iowa.

The Benefits of Co-operation.

The farmers of this vicinity, (Choctaw County, Miss.,) have organized themselves into an Agricultural Society, known as "Mt. Airy Farmers' Club," having for its object our mutual improvement, in tilling the soil to the best advantage, so as to secure the largest possible yield, with a given amount of labor, and capital invested; to introduce among us the best seeds, and labor-saving implements, suited to our climate and varied soils; and last, though not least, to shift our trade from the numerous catch-penny country stores, at which we have hitherto traded, pay-

ing a heavy percentage on all we bought. A few of us conceived the idea that we could do better, and put the ball in motion; and in our first order to New Orleans, of seven hundred and thirty-five dollars, we have saved about *two hundred dollars*—a considerable item.

But my particular reason for addressing you is, for all the information you may feel disposed to give, in regard to the Order of the Patrons of Husbandry. Our Club is yet in its infancy, and we desire all the light we can get from those better informed than we are. Hence, any information you may be disposed to give, will be thankfully received. W. P. DOTSON.

Dido, Miss.

Natural History Applied to Agriculture.

Specimens of insects, securely packed, (according to instructions given in The Rural Carolinian, for April, 1872,) with letters of inquiry, entomological notes, etc., should be addressed, (post paid,) to Mr. Charles R. Dodge, Washington, D. C.

Notes on Southern Entomology.—II.

Mantis Carolina.—A few days ago we were much interested in watching the hatching of the eggs in an egg-cluster of *Mantis Carolina*, commonly known as rear-horses in the Southern States. The cluster of eggs, as deposited by the female, was placed last fall in a wardian case filled with ferns, in the rooms of the Entomological Cabinet, at the Department of Agriculture, and the early hatching was doubtless due to the uniformly warm temperature of the room.

Our attention was first attracted one morning by a number of small yellowish points above the ridged portion of the egg-clusters, when suddenly, to our surprise and delight, one by one the little points seemed to rise or glide out of the *crevices*, so to speak, in which they had lain, without any motion of their own; in fact, as they tapered down to a point, regularly, from the head, it seemed as though the cell walls had been suddenly compressed, and had forced them out. Fairly hatched, and laying helpless on a projecting ridge of the sash, we had a fine view of them through the magnifying glass, which clearly revealed their large triangular heads and bead-black eyes, and their slender legs, which were pressed close to the side of the body. The whole was enclosed in a delicate membrane, hardly visible even with the magnifier, and altogether they seemed more like the pupæ of some species of flies we have seen, than juvenile "rear-horses."

A moment of helpless inactivity, and then all those six little legs commenced working and twisting, till, finally, perfectly free, and the now useless envelop or membrane brushed carelessly away, our little hero stands erect, with head cocked to one side, as saucy and defiant as only a mantis can look. Their color, when first hatched, is honey-yellow, but in a few days they become quite dark, and as active and quick in their motions, as their full grown ancestors, although lacking the wings.

The Mosquito.—As common as this irritating little insect is, throughout the United States, and as well known as it has become through repeated *introductions* of a too personal nature to be soon forgotten, we doubt if half the people of the country know anything of its curious and interesting natural history.

How many of our readers have seen their rain-water tanks, or barrels, swarming in summer with myriads of active little creatures, all *tail*, that squirm and wiggle to the bottom when approached, in a most unceremonious manner, and who at the same time are almost tormented to death, o' nights, by hordes of "skeeters," that come from ——, well, the Lord only knows where! Perhaps many have had the same experience as a friend of ours, an entomologist too, that tried to prevent the little tormentors from paying nocturnal visits, by keeping "closed doors," notwithstanding it was summer; but the little rascals had it all their own way, nevertheless, for the servant brought fresh importations to his room every morning, from the old hogshead under the eaves-trough, and all they had to do was to change from aquatic insects to full-fledged mosquitoes. The moral, if there is any to be drawn, is to keep your rain-water tanks covered.

There are many species of these insects in America, all belonging to the family *Culicedæ*, and all more or less having the same blood-thirsty propensities. The eggs are deposited by the female upon the surface of the water in a little boat-shaped mass, and are of an elongate form; they are soon hatched, especially in hot weather, and the larvæ are seen in great numbers in standing or stagnant water, wiggling about in the same manner, as in the rain-water barrel. They are long, cylindrical, having large rounded heads, the thorax provided with bristly hairs, and on the tenth ring of the body there is a respiratory organ, ending in what resembles a star, through which the insect occasionally takes air, rising to the surface for the purpose, though the greater part of the time they remain at the bottom, feeding upon decaying, and decomposing matter, and doing a good work in clearing away causes of miasma. They change their skins several times and finally transform to pupæ, which likewise swim about freely in the water, though unable to take any food whatever. The organs of respiration, are now changed from the tail or body of the insect to the thorax, and consists of two short tubes, or horns, so that it can now draw fresh supplies of air from the surface without standing, or suspending itself head downward, as is the case with the larva. The body is much curved, and when the mature insect finally appears, the cast skin serves as a raft or boat, on which to sustain itself till its wings are ready for flight. The entire transformations are effected in about four weeks, so there are a number of broods in a season, which easily accounts for the swarms which sometimes abound in the vicinity of damp localities in the early fall.

The males are hardly as bloodthirsty as their dames, spending their days in retirement, amid the solitude of the forests and swamps. The mouth parts of the females are made up of no less than seven distinct pieces, which, massed together, are thrust into the flesh, and the blood sucked up through the channel formed between them. The manner in which this is accomplished is extremely interesting. In the language of an old writer on the subject, "thirsting for its evening meal, the little

animal enters our apartments, and instead of whirling, like the moths, round the light, it betakes itself to its employment, sounding an approach, however, by a tolerably loud humming,* which, in our chambers at least, is often sufficient to banish sleep. Taking its station upon an uncovered part of the skin, with so light a motion as not to be perceptible when it alights, (although it will not hesitate to make its attacks occasionally through our thick clothing,) it lowers its rostrum and pierces the skin by means of its exceedingly slender needle-like lancets, which are barbed at the tips, and, as by degrees, it pushes these deeper into the skin, the lower lip or sheath, in which they are enclosed when at rest, becomes more and more elbowed toward the breast, until the whole length of the lancets are introduced into the skin." The same writer supposes that a venomous liquid is instilled into the wound, which not only enables the blood to flow fast, but is the cause of the subsequent irritation.

Of course, prevention is better than cure, in the case of these insects, so we resort to curtains of netting around the beds, or window frames of the same material, which generally answer the purpose. Pennyroyal rubbed upon the hands and face when in the woods, will keep them off, and in all probability the oil or essence may be used to advantage at home, and if disagreeable or injurious to skin, might be dropped upon a sponge placed near the head of the bed.

Of course, there is no such thing as preventing the existence of the insect, unless we drain all the swampy land, and dry up all standing water; besides, as their larvæ are wholly beneficial, we might be cutting off our noses, even if such draining were possible.

Our Native Grasses.—I.

I propose in the following papers to give a short descriptive enumeration of such of our Sedges and Grasses as have been found beneficial or injurious in agriculture—including, also, the introduced grasses which have become naturalized in the Southern States. Our limits embrace such a wide area, and so diversified a field, from the mountains of Georgia and the Carolinas, through the middle and lower districts to the sea coast; and thence to the Southern point of Florida, and along the Gulf, upland ridges, sand hills, pine barrens, deep river swamps and saline marshes, prairie and forest, each supporting a peculiar vegetation, that many species which flourish in one section may be totally unfitted for another. Along the mountain ranges and in their vicinity, most of the cultivated grasses of Europe and the Northern States flourish and become naturalized, whilst on the sandy region of the sea board and along the Gulf coast, the hot dry summers forbid successful cultivation. Due allowance must, of course, be made for this difference.

Cyperus.—This is a large family of sedge grass, and mostly found in marshy ground and wet places, with simple, three-angled, solid stems and grass-like leaves.

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* From a calculation made by the Baron Caignard de Latour, the gnat, during flight, vibrates its wings 3,000 times in a minute.

1. Nut Grass—(*Cyperus hydra.*)

A native grass along the coast, from Florida to North Carolina. It has a perennial creeping, tuber-bearing root-stock, which propagates rapidly all summer, throwing up successively new shoots, which again extend themselves in all directions. Stems ten to twelve inches high, bearing the dark, chestnut-colored spikes. The tubers are blackish and have a musky odor. Along the sea board, and a hundred miles or more in the interior, it is a great pest to the farmer, from the rapidity of its growth, and the difficulty of eradicating it from cultivated grounds. Hogs are very fond of the tubers, but they always leave enough in the land to reproduce a good crop for the next year.

2. Grass Nut—(*C. repens.*)

The habit of this species is very similar to the last, but it grows rather higher, the spikes more of a yellowish brown, and the whole aspect of the plant is a lighter yellowish green. The tubers, when cleaned, are yellowish, and have a pleasant, sweetish taste. They are commonly sold in Charleston market as "Grass nut," and are fully as good as the imported "Chufa."

3. Carex.

This is the largest family of plants known in the world, but yield scarcely anything of value to man or beast, being mostly coarse and innutritious grasses, growing generally in wet and boggy soils. Like Cyperus, they have solid, triangular stems, and various grass-like leaves. They are found in greater abundance in colder climates, the Northern States having one hundred and thirty-two native species, whilst here we have only seventy-four. The other families of sedges and rushes are not of any economic value, and we pass on to the grasses.

As the sedges are distinguished by their *solid, three-angled stems*, the true grasses have mostly *round, hollow stems*, closed and sheathed at the joints, and more or less leafy. This is a vast and important family, as it furnishes all the cereal grains, the best hay, and the best pasturage for animals.

4. False Rice.—(*Leersia.*)

We have four Southern native species, which are confined to marshes and damp grounds.

L. Oryzoides, the largest, is a free growing grass, sometimes cut for hay, but not esteemed much on account of the very rough leaves.

5. Wild Rice—(*Zizania.*)

Two species, which extend all over the United States. They are large, coarse, reed-like water-grasses, six to eight feet high, with large spreading panicles. The seeds are collected and used by the Northwestern Indians as an article of food.

6. Fox-tail Grass—(*Alopecurus geniculatus.*)

A flat-leaved grass, with stem eight to twelve inches high, and bent at the lower joints, and spikelets closely crowded in a cylindrical head. Grows in damp, cultivated grounds. The "Meadow Fox-tail," (*A. pratensis,*) a taller species, and one of the favorite grasses of the Northern States, is scarcely naturalized here.

7. Black Seed Grass—(*Sporobolus Indicus.*)

This is a common grass at the South, especially about old lawns and around dwellings, where the soil is rich and undisturbed. It grows from perennial, fibrous, tufted roots, and throws up numerous erect stems, with long leaves, and closely oppressed panicles. It is called "Black-Seed Grass," from the appearance of the flowery stem, which is nearly always attacked by a dark, smutty fungus, thus destroying most of the seeds before they can mature.

8. Bent Grass—(*Agrostis.*)

Five native species of this grass, but none cultivated. The European "Red Top," (*A. vulgaris,*) is now naturalized here, in the upper and mountainous districts.

9. Timothy—Herd's Grass—(*Phleum pretense.*)

Introduced, and only found sparingly naturalized.

10. Marsh Grass—Salt Marsh—(*Spartina.*)

We have four native species, growing in salt or brakish marshes, furnishing in spring and summer, an abundant supply of green pasturage, along the coast region, and a valuable ingredient for compost manures. For this last purpose, it was formerly used very extensively on the Sea Island plantations.

11. Joint-Grass—Bermuda Grass—(*Cynoda Dactylon.*)

An introduced plant, but now so thoroughly naturalized as to have spread all over the Southern country, from Virginia to Florida, and well known everywhere. I saw it growing luxuriantly in Texas, in the streets of Galveston.

It has a creeping, jointed stem, underground, and from this grows up the numerous shoots, not over six to eight or ten inches high, terminated by three or four spreading, purple spikes of flowers. The underground stems, (or roots as they are called,) being protected, never die out, so that it is a permanent grass; and once having established itself, springs up annually and propagates rapidly. Ploughing the ground and tearing up the roots, only multiply the growing points, as each joint has a bud capable of growth. Hence it has received both blessings and curses from the farmer,—blessings from those who want a permanent pasture, and curses from those who wish to eradicate it from cultivated grounds.

12. Crow-foot Grass—(*Dactyloctenium Ægyptiacum.*)

This, one of our best and most generally known summer grasses, is an introduced plant, but common everywhere, springing up in early summer in our cultivated fields, and displacing many of the less vigorous native grasses. It is often cut, and makes a good hay.

13. Dutch Grass—(*Eleusine Indica.*)

Another introduced grass, of stout succulent habit, with flattened stems and leaves, thick, fibrous roots, penetrating deeply, and from three to six densely flowered spikes three to four inches long. Grows from one to ten feet high, and generally seen about gardens and rich grounds about dwellings towards midsummer.

13. Cane—(*Arundinaria gigantea.*)

In the deep river swamps of the Southern States, the "Cane-brakes" constitute a remarkable feature of vegetation. The first years' growth is a simple, rigid,

upright stem, hollow throughout except at the joints, where it is sheathed by the long evergreen leaves. After the first year, they begin to branch by throwing out shoots from the joints. For several years this branching growth will continue, but they grow but little more in height, until the period for flowering comes. This is indefinite, but always takes place about the month of February,—they all flower together, and after flowering die off, and are replaced the following season by a new growth.

In the rich, alluvial soil of the Santee swamp, I have seen acres of this cane, in thickets so dense as to be impenetrable by man or beast, and growing to the height of twenty to thirty feet with a diameter at base of two inches or more.

This cane grows only as far North as Cape Fear river, in North Carolina, and extends Southward to Florida.

15. *Arundinaria tecta.*

This is a smaller species, or perhaps only a stunted form of the large cane, now commonly seen in numerous swamps and low grounds, not over a few feet high.

The leaves of the cane are evergreen, and furnish an excellent pasturage for cattle during the winter.

MEADOW GRASS—(*Poa.*)

Most of our species are introduced, and have become naturalized.

Poa annua, a low annual, growing in tufts not over six to eight inches high, is one of the earliest grasses, flowering about February and March, and generally seen about dwellings and in old lawns and gardens.

Poa pratensis, the common *Meadow grass*, is sometimes seen about dwellings, in rich soil, with stems one to two feet high.

Poa compressa, *Blue grass*, is a delicate, rich looking grass, with a tint of blue in the leaves; found in patches, on rich, dampish, clay soils protected from the sun. The stems are low, but numerous, growing from a creeping root-stock. It is only in favored spots that this fine grass can thrive, in the lower Southern States.

17. ORCHARD GRASS—(*Dactylis glomerata.*)

Introduced, but naturalized and found sparingly in sheltered spots, protected from the sun.

H. W. RAVENEL.

MISCELLANEOUS CORRESPONDENCE AND NOTICES.

More about Jute and Jute Seed.

EDITOR OF THE RURAL CAROLINIAN: I have made very particular enquiry regarding the jute we have in this Sate. In the spring of 1870, the Department of Agriculture distributed small lots of two varieties of seed. The one having the round seed pods, the other the long pod such as you have described. I think there were none of the long pod variety sent from the Department last spring.

Mr. Thomas F. Chapman, of Red River Landing (P. O.) Point, Coupee Parish, La., has grown extensively the two varieties. In a letter recently received from him, he says, "I regard the long pod variety so far superior to the other, that I will not gather the seeds of the round pod variety."

Mr. Chapman has promised us a pamphlet of "*All I know about Jute,*" by next planting season. He offers his best variety of seed, at five dollars per single pound, *by mail.* If five pounds or more is ordered, $4.50 per pound. The seed is exceedingly troublesome to harvest.

In planting *for seed only,* I think one pound could be made to plant an acre, in chops 2½ feet apart on rows 3½ feet apart. For a full crop of fibre three pounds per acre in *drills* 3½ feet apart.

In your note (page 60, November number,) you say "There were two varieties, one with a green and the other with a redish stalk." In the burr variety I notice the same difference in the stalks. Mr. Chapman calls that with burr-like capsule, the "French jute," the other, "Calcutta jute. F. W. J.

New Orleans, La.

Mr. Johnstone will please accept our thanks for the small package of seed, (with specimens of the capsule) accompanying the foregoing communication. As there is much inquiry for the seed we would say that it can not be obtained in the United States, so far as we can learn, at any reasonable price. Persons desiring to import it can order from Vilmorin, Andreux & Cie, Paris, France, who have the Calcutta seed. Price in Paris, about $25, in gold, per bushel. It is now too late, however, to order it for next spring's planting.—Ed.

Seed Corn.

Editor Rural Carolinian: Very many farmers and planters are of the opinion that a variety of corn with a small cob and large grains will yield more per acre than a variety with a large cob and grains of the same size. This is a mistake as can be seen by a moments reflection. We have frequently heard it asserted that where only a small portion of the bulk of an ear of corn is made up of cob, there must necessarily be more grain than were it otherwise. This is certainly not a very logical conclusion.

A large cob having more surface for the attachment of the grains than a small one, unquestionably has a correspondingly greater number of grains. It is true that a measure of an ear corn of the small cob variety, a barrel full for instance, contains more grain than a like barrel full of the large cob kind; a fact which has doubtless caused many to fall into the prevailing error; but it is equally true that off of a piece of ground planted in corn of the large cob variety, a greater number of barrels of ear corn will be obtained than if it had been planted in the small cob variety, and the bulk of the large cob corn over and above that of the small cob variety is made up of grain as well as cob. This being the case there can be no question as to which of the two kinds will yield more per acre. The large cob corn, if we mistake not, will yield from two to five bushels more than the other. If our memory serves us correctly, Mr. Editor, you once, in a short editorial upon the subject, spoke of a small cob as an important characteristic of a good variety of corn for seed.

Do you plead guilty to the charge? HILL-SIDE.

St. Matthews, January, 1873.

What a Lady Thinks of It.

Editor of the Rural Carolinian: I write to tell you how much I have been a gainer by being a subscriber to the Rural Carolinian. As I was forced to live in the country, being fond of horticulture, and not having the opportunity of indulging my taste, I began dabbing in agriculture. I subscribed for and read your magazine. I had an acre of land, which had been an old lot, broken up and

cultivated after the Dickson mode in cotton. I procured two bushels of the Dickson extra seed, but the summer of 1871 proving so very dry, I only realized from it 300 lbs. of lint, which was white and beautiful, and which I sold for $60, and 25 lbs. of lint of stained cotton I reserved for a mattrass. I began to think this not a bad investment, and the next year I became more interested, and increased my lot one-quarter of an acre, and had it again planted with Dickson seed. The present year proving favorable, I had picked and weighed before witnesses 3150 lbs. of seed cotton. I did not gather the cracked bolls leaving them for my milk cow.

So you see, Mr. Editor, my two years subscription to the RURAL CAROLINIAN has paid me handsomely. LADY FARMER.

Thanks for these good words for us and the RURAL CAROLINIAN, and most of all, for the excellent example this "Lady Farmer" has set before our readers. It should make some of our young men ashamed of themselves.—ED.

How to Destroy Nut Grass.

EDITOR OF THE RURAL CAROLINIAN : I have seen various suggestions offered as to the best means of getting rid of that terrible pest to all planters, nut grass; but they have all failed to suggest the true remedy. I have it in a nutshell. The nut will not propagate if the plant be not allowed to go to seed for two years. It must be allowed to shoot and be prevented from going to seed for two years, you will never see any more of it. The principle is this, the old nut exhausts vitality in that time, and no new nut is formed or matured, when not allowed to go to seed. This has been actually demonstrated by me for the last fifteen years.

Walterboro', S. C. B. STOKES.

Seed and Plant Exchange.

The Editor of the RURAL CAROLINIAN wants two or three roots of the fragrant white water lily, (*Nymphœa odorata,*) and a few bulbs of the Atamasco lily, (*Amaryllis Atamasco,*) common in moist places, in Florida and elsewhere, in the South. Flowers funnel form, white with a pinkish tinge. He will send in return any rare seeds or plants that he may have to spare, as desired.

Mr. H. W. Ravenel, Aiken, S. C., has a quantity of Jujube seed, which he will distribute by mail to such persons as desire it and will send him ten cents to prepay postage.

W. S. Hudson, Lynchburg, S. C., will exchange Doura Corn, Peabody Prolific Corn, or Japan Peas for Rattle-snake water-mellon seed.

Inquiries and Answers.

J. L. W. desires to know—

1st. The most economical plan of obstructing a winter and freshet branch that passes lengthwise through my farm, so as to accumulate the debris that is washed from some of my best woodlands. Would charred white-oak staves three inches thick, standing out of ground two feet, do?

2d. The best "*farm grist-mill*" that will grind five or ten bushels of good fine meal

per hour, and capable of operation so easy that two good oxen or horses can work it. I find so *many* patents published, each with features of special commendation, that I am at a loss to determine the best. Durability and cheapness are essentials.

3d. In the absence of a "mill" proper, will the "Little Giant," a corn and cob crusher, pay? With reference to the "farm grist mill," if there be none really good, cheap and durable, that can be operated without the aid of other machinery, please mention what kind is best?

We hope some of our readers may be able to answer these questions, as they all relate to matters of interest to farmers generally. With regard to "cheap" mills, our experience has not been favorable, and we have been led to doubt the existence of a really good mill, which is at the same time low priced; but some of our correspondents may have had a more favorable experience.

———"A Subscriber," Fort Motte, S. C., wishes some of our subscribers who have had experience in the matter, to tell us the best plan for making crab-grass, or crow-foot grass hay, in middle South Carolina? "Would you," he asks, "break up the land now, and then again about the 1st June, or wait until the summer? How is it best cured? Must it be raked up into shocks in the afternoon of the day it is cut, and how long before it should be shocked or housed? Has any one ever baled and sold it to advantage in our cities, or like most home productions, is it thrown aside for Northern hay at $2 per hundred?" We gave our plan for making crab-grass hay in the RURAL CAROLINIAN, for May, 1871, p. 475; but shall be glad to hear from others.

———"Novice," Sumter. 1. We are sorry to say—sorry, rather, that the facts require us to say—that Peabody's Cotton Seed Huller, has not generally proved satisfactory to those who have used it. Machines sold here, have been returned to the agent, as failing to redeem the promises made for them. There is not, so far as we know, *any* good low-priced huller. 2. Cotton Seed may be fed to horses and cattle, simply crushed or as cotton seed cake after the oil has been expressed. It is best to mix it either with meal or with cut straw, ground corn-cobs or other similar coarse food, adding a little salt. Without the salt some animals reject it. Stock thus fed make the richest of manure. 3. Cotton seed, as manure, is rated at from 20 to 25 cents a bushel, but we think its real value is greater than even the last of these prices.

———I. W. J., Florida. The plant, leaf, seeds and fibre, of which you send, appear to be a species of *Xanthium*, but neither the leaf nor the seeds correspond with either of the only two species described in the botanical works before us—*X. strumarium* and *X. spinosum*. It is the same, we believe, as is known in some parts of Florida, as Spanish Cockle Burr. The fibre resembles that of Jute, but is stronger and finer. We will endeavor to ascertain, from some experts in such matters, whether it has any economic value.

———F. E., Orlando. We have not been able to find the Abyssinian banana for sale anywhere. Possibly a plant might be obtained from the Department of Agriculture, at Washington.

———H. S. desires information in regard to the cost of wire fence, suitable to serve as a protection against cattle. We have no experience in building such fence, but the present estimate at the North is, we believe, 40 cents a rod for a six wire fence, exclusive of posts and labor of setting; but five wires would, perhaps be sufficient for a cattle fence. Can any of our readers give a more definite reply, founded on actual experience? Dealers in wire and wire fences would do well to advertise and give *prices*, as there is much inquiry in regard to fences and the cost of fencing materials.

———L., Charleston. 1. See answer to J. P. S. in January number, in regard to the seeds advertised last year by Jas. V. Jones, of Herndon, Burke Co., Ga. They are not for sale here, so far as we know. 2. Egyptian corn is a "humbug," and was exposed in the RURAL CAROLINIAN, soon after the advertisement, through some inadvertence, got inserted.

———"Young Farmer," Miss. We cannot tell where you can get plaster cheapest, to be delivered in your part of the country. Farmers should get this and other fertilizers, and their supplies generally, by means of some co-operative action, such as a Grange of Patrons of Husbandry, or a Farmers' Club, can readily organize. That is what we are doing here.

———F. E. M. Yes the Acid Phosphate may be used with advantage, as you indicate, also with cotton seed.

General Notices and Acknowledgments.

The "Seed Catalogue" of Peter Henderson & Co., for 1873, is very full in every department and beautifully illustrated, and is prefaced by some excellent and timely practical directions for planting seeds. The frontispiece is a beautiful chromo, representing the new amaranth *Salicifolius*, or Fountain Plant, a novelty of striking beauty. Peter Henderson & Co. can always be depended upon to do what they promise, and they promise tested seeds fresh and true to name. Send 25 cents for the Catalogue. With the first order of seeds amounting to $1 or more, the amount will be refunded in choice flower seeds. Address No. 35 Courtland street, New York.

Who is "R. C.?" We frequently copy good things from our excellent cotemporary, the *Plantation*, giving due credit in the old way, but we perceive that a new and more convenient style of editorial acknowledgment has been introduced by that paper, which credits an article taken from the RURAL CAROLINIAN to "R. C." Shall we, for the future, make use of the simple initial "P." for the *Plantation?* That will be convenient, and save type and space.

The *Rural Alabamian*, for January, has an article on "Insects as Food," which looks very familiar to us—in fact, we are sure we have seen it before. Will the *Alabamian* please tell us and its readers where the article was originally found?

Literature, Science and Home Interests.

BRIGHT HOURS ONLY.

A lesson in itself sublime,
A lesson worth enshrining,
Is this—"I take no heed of time,
Save when the sun is shining,"
These motto words a dial bore,
And wisdom never reaches
To human hearts a better lore
Than this short sentence teaches.
As life is sometimes bright and fair,
And sometimes dark and lonely,
Let us forget the toil and care,
And note the bright hours only.

There is no grove on earth's broad chart,
But has some bird to cheer it,
So hope e'er sings in every heart,
Although we may not hear it.
And if to-day the heavy wing
Of sorrow is oppressing,
Perchance to-morrow's sun will bring
The weary heart a blessing.

We bid the joyous moments haste,
And then forget their glitter,
We take the cup of life and taste
No portion but the bitter.
But we should teach our hearts to deem
Its sweetest drops the strongest,
And pleasant hours should ever seem
To linger round us longest.

The darkest shadows of the night
Are just before the morning,
Then let us wait the coming light,
All boding phantoms scorning,
And while we're passing on the tide
Of Time's fast ebbing river,
Let's pluck the blossoms by its side,
And bless the gracious giver.

LAURELLA.

I.

The sun has not yet risen above the horizon. Over Vesuvius there hangs a broad, gray stratum of fog, that stretches across as far as Naples, and obscures the small towns scattered along the shore. The sea is calm. At the mouth of a small creek, at a little harbor enclosed by the Sorrento Cliffs, fishermen and their wives are already at work drawing their skiffs to land, with the nets that have been set during the night. Others are occupied getting their boats ready for sea—setting their sails, shipping their rudders, and bringing oars and tackle from the grated vaults, built in the cliffs for the protection of their property at night. There are no idlers; even the aged, who no longer go out to sea, fall into the line, and help to draw the nets to the shore. Here and there may be seen an old woman, spinning on the flat house-tops, or busy with her grandchildren, while their mother assists her husband.

"Do you see, Rachela?—there is our good Padre Curato," said one of the old woman to a child of ten years that stood beside her. "See—he is just getting into Antonio's boat to be rowed over to Capri. Maria Santissima! but how sleepy the reverend signor looks!" And she waved her hand to a benevolent looking little priest, who was making himself comfortable in a row-boat that lay at the mouth of the creek. The others on the shore stopped work to see their pastor start off, an attention to which he responded by many a kindly nod.

"Why must he go to Capri, grandmother?" asked the child. "Have the people over there no pastor, that they must borrow ours?"

"Don't be so foolish" chid the old woman: they have priests enough, and the most beautiful churches, and even a hermit, which we have not. But there is a great signora over there, who used to live here in Sorrento, where she was once so ill that our padre had to go to her very often, for they thought every day would be her last; and still, thanks to the Holy Virgin, she got quite well, and was able to bathe in the sea again. When she went over to Capri, she gave a big pile of ducats to the Church and the poor; and she did not want to go, they say, until our padre promised to go over there, that she might confess to him as before. It is wonderful how much she thinks of him. We may be very proud to have a curate who has learning enough for a Bishop, and is so beloved by all the great folks. May the Holy Virgin have him in her keeping!" she exclaimed, and waved her hand to the little boat as it was about to put from shore,

"Shall we have clear weather, my son?" asked the little priest, with a doubtful look toward Naples.

"When the sun rises that little cloud of fog will soon disappear," replied the young boatman.

"Well, then, let us be off, so that we may get over before it gets hot."

Antonio picked up an oar, and was about to push off the boat, when he paused suddenly, and fixed his eyes on the steep path that leads down from the Sorrento Cliffs to the water.

A lithe female figure was visible at the summit of the heights; she waved her handkerchief, and was making all possible haste to descend the stony path. Under her arm she carried a small bundle, and her dress was of the plainest description. Still there was an

almost distinguished air about the girl, and that, too, in spite of a wild, defiant way she had of carrying her head, which was adorned with a profusion of dark tresses that she wore tastefully wound round her forehead like a diadem.

"What are you waiting for?" inquired the curate.

"There is some one coming up there that wants to go to Capri—with your permission, padre. We shall not go any slower; for its only a slight young girl, scarcely eighteen."

At this moment the girl appeared from behind the wall that borders the winding path.

"Laurella!" cried the padre. "What has she to do over in Capri?"

Antonio replied with a shrug. The girl, without looking to the right or the left, hastened toward the boat.

"Good morning, la Rabbiata!" shouted several of the young boatmen. They doubtless would have added more, but for the presence of the curate; for the silent defiance with which the girl received their salutations seemed to tempt the more wanton of them.

"Good morning, Laurella!" greeted the priest. "Are you going with us to Capri?"

"If I am allowed to, padre."

"Ask Antonio; he is master here. Every man is master—at least, he should be—of his own, as God is the master of us all."

"There is half a carline," said Laurella, without looking at the young boatman—"if I may go for that."

"You have more use for it than I have," muttered the young man, pushing aside some baskets of oranges to make room. He was to sell them in Capri, for the little rocky island does not grow enough for its numerous visitors.

"I will not go for nothing," answered the girl, wrinkling her dark eyebrows.

"Come, come, child," interposed the curate; "he is a good lad, and will not enrich himself from your poverty. Come, step in"—and he reached her his hand—"and sit down here by me. See there! he has spread out his jacket to make a soft seat for you. He did not take so much trouble for me. The young fellows are all alike; for one little maiden they will put themselves out more than for a dozen of us reverend fathers.—Nay, you need not excuse yourself, Tonino—throughout all Nature, like seeks like."

Laurella meanwhile had stepped into the boat, and seated herself beside the padre—first, however, pushing the jacket aside without saying a word. Antonio let it lie, and, muttering something, he pushed vigorously against the pier. The boat sped out into the bay.

"What have you in your bundle?" asked the padre, as they rowed on over the calm sea, that was beginning to be lighted by the rising sun.

"Some silk, some yarn, and a loaf of bread, padre. I am going to sell the silk to a woman who makes ribbons, and the yarn to another.'

"Is it of your own spinning?"

"Yes, padre."

"If I remember rightly, you have also learned to weave ribbons?"

"Yes; but mother is so much worse lately that I cannot leave her alone, and we are not able, you know, to buy a loom for ourselves."

"She is worse? I am sorry to hear it. When I called at Easter, she was better than usual."

"She is always worse in the spring; and, since the severe storms and the earthquakes we have had, she has been confined to her bed."

"Do not neglect to pray, my child, that the Holy Virgin may intercede for you. And be good and industrious, that your prayers may be heard.—When you were coming toward the boat, they called out, 'Good morning, la Rabbiata!' to you," continued the curate, after a pause. "Why do they call you so? It is not a nice name for a Christian girl, who should be gentle and humble."

Laurella's olive face became crimson, and her eyes flashed fire.

"They are always jeering at me, because I do not dance, and sing, and gossip with them. I think they might let me go my way in peace. I never interfere with them."

"But you should be friendly toward every one. Let those dance and sing on whom life sits lighter. A kind word becomes those even who are most sorely tried."

She looked down and drew her eyebrows nearer together, as though she would hide the large dark eyes beneath them. For awhile they rowed on in silence. The sun had now risen resplendent above the mountains. The summit of Vesuvius still towered above the clouds that hung around its base, and on the plains of Sorrento the white cottages gleamed amid the verdant orange-groves.

"Have you heard nothing more from the painter, Laurella—I mean the Neapolitan who wanted you to be his wife?" asked the curate.

She shook her head.

"Why did you refuse him when he came to paint your portrait?"

"What did he want of it? There are prettier girls than I am; and, then, who knows what he would have done with it? He might have bewitched me with it, mother said."

"You must not believe such foolish things," said the padre, seriously. "Are you not always in God's keeping, without whose knowledge not one hair of your head can fall? And shall a poor, weak mortal, with such a picture in his hand, prevail against the Lord? Besides, you might have seen that he wished you well. Would he otherwise have wished to marry you?"

She was silent.

"Why did you refuse him? He was a worthy young man, they say, and handsome and talented, too. He would have provided for you and your invalid mother far better than your spinning will ever provide for you."

"We are so poor, and mother will probably never be much better!" said she, feelingly. "We should only have been a burden to him, and then I should never do for a signora. When his friends came to see him, he would have been ashamed of me."

"What nonsense you do talk, my child! I tell you the man meant well with you. What better proof could you have had than his offer to come and live in Sorrento?"

"I want no husband—never shall!" said she, obstinately, half to herself.

"Is this a vow you have made, or do you think of becoming a nun?"

She shook her head.

"The people who accuse you of being obstinate are, I fear, not altogether wrong. Do you ever reflect that you are alone in the world, and that your perverseness must still further embitter the life of your sick mother? And what good reason have you for refusing a loving hand that would find its greatest happiness in aiding you in your necessities? Tell me, my daughter."

"I have a reason—a good reason, I think—but I had rather not tell what it is," said she, in a low, hesitating tone.

"Not tell what it is! Not to me, your confessor? Am I not your friend?"

Laurella nodded an affirmative.

"Then, child, unburden your heart. If you are right, you may be sure I shall be one of the first to uphold you; but you are young, and know little of the world. The time may come when you will regret having allowed some girlish fancy to stand in the way of your happiness."

She glanced modestly at the young man, who sat at the other end of the boat rowing away vigorously, his woollen cap pulled down over his eyes. He gazed into the distance, and seemed to be absorbed in his own meditations. Her glance did not escape the padre's notice, and he leaned his head closer.

"You did not know my father," she whispered, and a frown clouded her handsome features.

"Your father? He died when you were scarcely ten years old, I think. What can your father have to do with your present perversity?"

"You did not know father. You do not know that he alone was the cause of my mother's illness."

"How so?"

"He misused her, beat her, trampled upon her. How well I remember the nights when he came home in fits of frenzy—when nothing did or could please him! She never said a word, and always did all he bade her, and yet he would beat her till I thought my heart would break. At such times I used to draw the covering over my head and pretend to be asleep, but I cried all night, and then, when he saw her lying on the floor, he would suddenly become compassionate, and raise her up, and almost smother her with kisses. Mother forbade my ever telling of this, but it so injured her constitution that during all these long years since father died, she has been an invalid. And should she soon die—which may Heaven forbid!—I shall know what it was that killed her."

The little curate shook his head thoughtfully, and seemed undecided what reply he should make. After a pause, he said:

"But you must forgive him, my daughter, as your mother has forgiven him. Let us hope that there are happier days in store for you than you have ever known! You should try to forget these sad scenes."

"Forget them! I never can," said she, with a shudder. "This is the reason, padre, why I am resolved never to marry; I will not be subject to a man who might misuse me. Were a man to want to beat or to kiss me now, I would defend myself, but mother could not, because she loved my father, unkind as he was to her. Now, I will never love any man so as to tamely suffer him to abuse me and to be made ill by him."

"You are a child, and you talk like a child that knows nothing of life. Are all men like your poor father, who, it seems, had never learned to curb his temper, and ill-treated your mother? Do you not see kind and just men enough in the neighborhood—men with whom their wives are happy and contented?

"But no one knew how my father treated my mother. She would have died sooner than complain, and all because she loved him. If this is love—if love closes our lips when we should cry out for help—if it makes us meekly suffer wrongs greater even than our worst enemy could do us, then I say I want nothing to do with love."

"I tell you that you are a child, and know nothing of such matters. When the time comes, your heart will not ask your little obstinate head whether it shall love or not—then all your resolutions will be of little avail." After a pause, he continued: "And the painter—did you fear that he would be unkind to you?"

"He looked sometimes just as my father used to look when he took my mother in his arms and begged her pardon. I know those eyes; they are no proof that a man will not beat his wife, although she may be a saint or an angel. It always makes my flesh crawl to see such eyes."

The curate thought of more than one wise saying with which he might have admonished the girl, but he was silent on account of the

young boatman, who began to be more inclined to listen to what passed between his passengers.

After two hours' rowing they reached the little port of Capri. Antonio took the padre in his arms and carried him through the shallow water of the landing to the shore; but, before he could return for Laurella, she followed them, holding up her scanty skirts with one hand, and carrying her bundle and her wooden shoes with the other.

"I shall remain some time in Capri," said the curate. "You need not wait. I may not return till to-morrow. When you get home, Laurella, remember me to your mother. I will come to see you in the course of the week. You mean to go back, I suppose, before dark?

"If I get an opportunity," answered Laurella, busying herself with adjusting her dress.

"You know that I, too, must be back in good season," said Antonio, in what he thought was a tone of great indifference. "I will wait for you till Ave Maria; if you are not here by that time, I shall go without you."

"You must try to be here in time," said the little padre. "It would never do for you to leave your mother alone all night. Is it far you have to go?"

"To a vineyard near Anacapri."

"I go in the direction of Capri. God bless you, my daughter, and you, my son."

Laurella kissed his hand, and said one good-by to be divided between the padre and Antonio. The latter, however, seemed little inclined to appropriate his share; he raised his cap to the padre, but did not even look Laurella's way.

But, after they had turned their backs, he let his eyes follow the padre only a short distance, as he toiled over the deep bed of small loose stones. He soon turned them toward Laurella, who had gone to the right, and now began to ascend the heights, holding one hand over her eyes to protect them from the burning sun.

Toward the summit, where the path disappeared behind a wall, she paused, as if to take breath and look around. The rugged rocks rose high around her, below lay the little, harbor, while beyond shone the sea in all the splendor of its deepest blue. The scene would well repay a moment's pause. It happened that, in glancing past Antonio's boat, she caught his eye. They both started, as people do who would excuse themselves for some inadvertency, and then Laurella, with one of her darkest frowns, went her way.

[*To be Concluded in our next Number.*]

Why was Goliah surprised when David struck him in the forehead with a stone? Because such a thing never entered his head before.

"I AM A WOMAN."

I am a woman—therefore I may not
Call to him, cry to him,
Fly to him
Pray him delay not!

And when he comes to me, I must sit quiet:
Still as a stone is,
Harder and colder,
If my heart riot—
Crush and defy it!
Should I grow bolder—
Say one dear thing to him,
All my life fling to him
Cling to him—
What to atone is
Enough for my sinning!
This were the cost to me,
This were my winning—
That he were lost to me!

Not as a lover at last if he part from me,
Tearing my heart from me—
Hurt beyond cure—
Calm and demure
Then my behaviour:
Showing no sign to him
By look of mine to him,
What he has been to me,
Pity me—lean to me—
Christ—O my Saviour!

[*Scribner's Monthly.*

SNAKES AND THEIR HABITS.

In an article on the habits of snakes, by an Indian correspondent of *Land and Water*, we find the following remarks upon certain prevalent notions concerning those reptiles:—

There is no truth in the generally received opinion that snakes possess the power of fascinating birds by their fiery orbs. The eye is very bright and beautiful; but it is a scale merely, immovably fixed in the head, so that an object cannot be well seen, excepting when right before the snake; hence the great advantage the mongoose has when attacking his natural enemy, as he generally manages to pin the snake before being seen himself.

Another fallacy is, that snakes have been known to give chase to people on the plains, and up trees (pity the man that sought refuge in a tree in that case.) It is quite contrary to the instinct of a snake, to give chase to man or beast. They do not require to make such exertion. Tiger-like, the python and boa-constrictor lie in wait for their prey, and when it approaches within fair reach, about one-third of the body is instantaneously launched upon the victim, and the next moment (if necessary) the remaining part of the body; when the bones are crushed in, the prey remaining a shapeless mass. No saliva is used to assist

the swallowing process, as generally supposed. Unlike the tiger, again, a snake never destroys life wantonly. * * * *

I never saw a boa-constrictor longer than twenty-six feet, or a python more than sixteen feet in length; they are not often found to measure so much. The latter, though shorter, is thicker than the former, but not so graceful or so finely marked. I do not believe that either reptile, of the above size, could swallow a stag or even a hind. True, the jaws dislocate at the time of swallowing, but even so, how could so large an animal pass through the mouth of a snake even thirty feet long? I never had proof of a larger animal than a tiger-cat being found in a python or boa.

The late Mr. Waterton once told me that he saw a piece of the skin of a snake he felt convinced could not have been short of seventy feet long! I have no doubt of the fact, from such good authority. He was a man quite incapable of the slightest exageration. Such a monster might manage a stag, but for the horns! Those large snakes swallow their prey head-foremost; they could not manage the hind legs any other way.

All snakes have amiable dispositions; at least, I can positively state that no kind of snake ever acts on the offensive, if not frightened or threatened. Any one accidentally treading on one would be at once bitten; but I have approached snakes, large and small, quietly, noiselessly, and with the least possible movement of the limbs and body, and stood over them, without their taking the least notice of me. I have taken fanged snakes by the neck (close to the head) and examined them with perfect impunity. Of course I never tried this game with any snake that I was not perfectly certain that I could hold, in spite of its struggles. I have known Mr. Waterton to open a box containing sixteen lively rattlesnakes (and before a horrified audience,) quietly insert his arm into the said box, and, one by one, lift out the sixteen, and put them into another box, without the slightest attempt on the part of the snakes to bite him. Now this proves that even fanged snakes are really amiably disposed, if not alarmed in any way.

At Hushungabad, in the Nerbudda district, in 1838, I came once upon two pythons, full size, basking in the sun. They were stretched full length, and about ten paces apart, and parallel to one another. I could not resist stealing quietly up to the tail of the one nearest to me, which I seized with a quiet, but firm grasp, keeping a good lookout in case he turned his head round at me. The monster merely moved slowly on right ahead, pulling me along as if I was but a straw. Had I approached suddenly and noisily, I have no doubt I should have been quickly reduced to potted meat in his crushing folds.

On another occasion, whilst enjoying a weed with a friend, just outside my bungalow, he all at once said in an anxious tone, "There is a cobra all but under your chair, and making dead for it." I felt as if a hot curling-iron was passing right through my hair, but I had sufficient presence of mind not to move, I even held my breath for the moment. The next instant, a fine, full-sized cobra issued out right from between "the pair of kippens that I have," and was yards away, in a crack. I then jumped up, and after it with a stick; when, perceiving my amiable attentions, up it reared hood and body and made a dash at me, but a gentle tap on the vertebræ of the neck quite disabled it.

These cases proved, beyond a doubt, that snakes are perfectly harmless if only let alone; but they have no idea of returning "good for evil," nor have many "Christians" that I have ever met with.

A FOREST HYMN.

Stretching far on either hand,
Rows of lofty columns stand,
By the All-Wise builder planned,
For his temple olden;
And the vista'd aisles I tread,
Arched so grandly overhead,
Are with verdure carpetted,
Inwove with flowers golden.

List I here no chaunting choir,
Peals no organ on the air,
But the pine lutes, everywhere,
Touched by unseen fingers,
Yield their music to the breeze,
Chiming in with birds and bees,
'Mong the autumn-tinted trees,
Where the sunshine lingers.

God, thy greatness here I feel,
Heeds my heart thy love's appeal,
At thy forest shrine I kneel,
All my sin confessing!
Here with strength my soul imbue,
Light thy altar-fires anew,
Aid me to be pure and true,
Father, with thy blessing!

Summerville, S. C.

SUNLIGHT AND BEAUTY.

The correspondence between perfection of forms and heightening of luminous intensity proves true in the human race as in others. Æsthetics, agreeing with ethnography, demonstrate that light tends to develop the different parts of the body in true and harmonious proportion. Humboldt, that nice observer, says, speaking of the Chaymas: "The men and women have very muscular bodies, but plump, with rounded forms. It is needless to add that I have never seen a single one with any natural deformity. I will say the

same of so many thousands of Caribs, Muycas, Mexican and Peruvian Indians, whom we have observed during five years. These bodily deformities and misgrowths are extremely rare in certain races of men, especially among people who have a deep colored-skin." No doubt there is great difficulty in conceiving how light can model—can exert a plastic power. Yet, reflecting on its tonic effect on the outer tegument, and its general influence over the functions, we may assign it the part of distributing the vital movement orderly and harmoniously throughout the whole of the organs. Men who live naked are in a perpetual bath of light. None of the parts of their bodies are withdrawn from the vivifying action of solar radiation. Thence follows an equilibrium which secures regularity in function and development.—*Popular Science Monthly.*

FAT IN THE FAMILY.

When Chief Justice Marshall lived in Richmond, his opposite neighbor was Colonel Pickett. Colonel Pickett was a man of wealth, lived well, and was not content unless everything about his household bore the marks of good living. His horses were his pride, and were conspicuous everywhere for their splendid appearance, being as sleek, fat and high-spirited as abundant food and excellent grooming could make them.

Judge Marshall's horses, on the other hand, were notoriously lean and unkempt. Everybody but the Judge had long remarked this. At last it was brought to his notice, with the suggestion that his carriage-driver neglected the horses, sold much of their food and appropriated the money to his own use, a good deal of it going, no doubt, for liquor.

The Judge called him up without delay; "Dick, what is the reason Colonel Pickett's horses are in such splendid condition, while mine are almost skeletons? I am afraid you neglect them, don't half curry them and don't half feed them."

Dick, not expecting the attack, was fairly posed. He hemmed and hawed awhile till he could gather his negro wits about him, and then said:

"Mars John, look at you—is you fat?

"No," said the Judge—"decidedly not."

"Well, look at old miss," (Mrs. Marshall,) "is she fat?"

"No."

"Den look at me—is I fat?"

"No."

"Den look at yo' horses—is dey fat?"

"No."

"Now den, you jes' look at Kunnle Pickett—he fat, his ca'idge driver fat, his horses fat, his dogs fat—all fat. De troof is, Mars John, fat run in de Picket fam'ly, and it don't run in our'n. Dats all."

"Well," said the Judge, after a little reflection, "there is a good deal in that. It never occurred to me before."

He turned back into his study, and Dick was never troubled any more.

LOVE AND MATHEMATICS.

Johann August Musæus, one of the most popular German story-writers of the last century, in his story of "Libussa," makes the Lady of Bohemia put forth the following problem to her three lovers, offering her hand and throne as the prize for a correct solution: "I have here in my basket," said the Lady Libussa, "a gift of plums for each of you, picked from my garden. One of you shall have half and one more; the second shall again have half and one more; and the third shall have half and three more. This will empty my basket. Now, tell me how many plums are in it?"

The first knight made a random guess at three-score.

"No," replied the lady; but if there were as many more, half as many more, and a third as many more as there are now in the basket, with five more added to that, the number would by so much exceed three-score as it now falls short of it."

The second knight, getting awfully bewildered, speculated wildly on forty-five.

"Not so," said this royal ready reckoner; "but if there were a third as many more, half as many more, and a sixth as many more as there are now, there would be in my basket as many more than forty-five as there now are under that number."

Prince Waldamir then decided the number of plums to be thirty, and by so doing obtained this invaluable housekeeper for his wife. The Lady Libussa thereupon counted him out fifteen plums and one more, when there remained fourteen. To the second knight she gave seven and one more, and six remained. To the first knight she gave half of these and three more; and the basket was empty. The discarded lovers went off with their heads exceeding giddy and their mouths full of plums.

RUINED BY A SILVER TEA-SET.

Said a young husband whose business speculations were unsuccessful:—"My wife's silver tea-set, the bridal gift of a rich uncle, doomed me to financial ruin. It involved a hundred unexpected expenses, which in trying to meet have made me the bankrupt I am." His experience is the experience of many others, who, less wise, do not know what is the goblin of the house, working its destruction. A sagacious father, of great wealth, exceedingly mortified his daughter, by ordering it to be printed on her wedding-cards, "No

presents, except those adapted to an income of $1,000." Said he, "You must not expect to begin life in the style I am able, by many years of labor to indulge; and I know of nothing which will tempt you to try more than the well-intentioned but pernicious gifts of young friends." Such advice is timely. If other parents will follow the same plan, many young men would be spared years of incessant toil and anxiety; they would not find themselves on the downward road, because their wives had worn all of their salary, or expended it on the appointments of the house. The fate of the poor man who found a linch-pin, and felt himself obliged to make a carriage to fit it, is the fate of the husband who finds his bride in possession of gold and silver valuables, and no large income to support the owner's gold and silver style.

THE SOUTHERN STATES.

It is so much more pleasant and agreeable to praise, than censure, and so much more noble to *help to build up* than to *try to pull down*, that we are glad to find now and then cheering and noble wishes and sentiments uttered by the press.

Heaven knows the men of the press, as a general rule, are not much given to peace and good-will, but are eternally at war one with the other. But our Southern sister States, that have passed a fiery ordeal, now need all the generous good will that noble hearts are disposed to manifest, and we find good sentiments in a recent number of the "Washington Patriot," which we here copy with much pleasure:

The bearing of the Southern people, as a whole, under all that they have been forced, at the point of the bayonet and in other ways hardly less tyrannous, to undergo has been such as to command the respect and admiration of all candid and unprejudiced men. Their's has been no common lot, their sufferings no common sufferings, nor is what they have lost to be measured by any common standard. Amid it all they have been brave, stout-hearted, courageous; not sullen nor despairing, though greatly tempted to despair; but looking forward, through present darkness and over present calamities, to the dawn of a better day. Their patience, their strength, their good cheer, have not been in vain. The day is breaking, and this is due in great measure to their temperateness, wisdom, forbearance under trying circumstances. It cannot but be believed and hoped that the exercise of these will continue to the end. The recent past of the Southern people is a dreary waste. The opening future is full of promise to them as an integral part of the American people. And the time is not far distant when, relieved of the present embarrassments that impede their progress and bear them down, they will illustrate, for the encouragement of other nations and other times, how true it is

> That men may rise on stepping-stones
> Of their dead selves to higher things.

[*California Farmer.*

STUDY AS A BEAUTIFIER.

The woman who is indifferent to her looks is no true woman. God meant woman to be attractive, to look well, to please, and it is one of her duties to carry out this intention of her maker. But that dress is to do all, and to suffice, is more than we can be brought to believe. Just because we do love to see girls look well, as well as to live to some purpose, we would urge upon them such a course of reading and study as will confer such as no modiste can supply. A well known author once wrote a pretty essay on the power of education to beautify—that it absolutely chiseled the features; that he had seen many a clumsy nose and pair of thick lips so modified by thought awakened and active sentiment as to be unrecognizable. And he put it on that ground that we so often see people, homely and unattractive in youth, bloom in middle life into a softened Indian summer of good looks and mellow ones.

MARRIAGE AND MENTAL GROWTH.

There is a period in the early life of every true woman, when moral and intellectual growth seems for the time to cease. The intellect, having appropriated aliment requisite to growth of the uncrowned feminine nature, feels the necessity of more intimate companionship with the masculine mind to start it on its second period of development. Here, at this point, some stand, for years, without making a step in advance. Others marry, and astonish, in a few brief years, by their sweet temper, their new beauty, their high accomplishments, and their noble womanhood, those whose blindness led them to suppose they were among the incurably heartless and frivolous.

"Tommy, my son, what are you going to do with that club?" "Send it to the editor, of course." "But what are going to send it to the editor for?" "'Cause he says if anybody will send him a club, he will send them a copy of his paper." The mother came pretty near fainting, but retained consciousness enough to ask: "But, Tommy, dear, what do you suppose he wants with a club?" "Well, I don't know," replied the hopeful urchin, "unless it is to knock down subscribers as don't pay for their paper."

Railroads have now three guages——a broad guage, a narrow guage and mortgage.

For Our Young Folks.

OUR SULTAN.

Sultan, as he was well named, was a right royal watch-dog. His owner left him in care of Mr. D——; and all the D—— family became so much attached to him, that when the owner returned to claim his dog, the children set up such a dismal outcry, and their parents looked so regretful, that, although fifty dollars could not have bought Sultan, his master freely resigned him to the ownership of his new friends.

Then, oh, the shoutings, the rejoicings of that swarm of little D——s! And everybody else about the place was delighted; none more so than Sultan himself.

What a splendid fellow he was! He had his place at the table with the rest of the family, and nobody behaved with greater dignity and decorum than he.

Sultan needed no chair. Seated upon the floor, his head came up just where it ought to be at table. He was waited on with due attention; would have felt outraged indeed had not cake and pie been offered to him as well as to the others.

One day Sultan hurt himself and became very sick. His eyes grew red as blood, and he was evidently in agonies of pain. Mr. D——, who is a very nervous, timed man, charged everybody to keep away from the dog, as he was likely to go mad.

Mrs. D—— immediately went out to the barn, into which the poor beast had been fastened. The men-servants resisted her entrance, repeating her husband's orders.

"Out of my way," said Mrs. D——, "I will obey my husband in the Lord. This is *not* in the Lord. I mean to cure Sultan."

She sat down and watched him until she had concluded what was amiss, then went to the doctor for medicine.

"Let the beast *die*," said the doctor; "I don't know what to do for him. Besides, I wish he was dead. I'm afraid of him."

"So and so ails Sultan," persisted Mrs. D——; "do you give me just the medicine you would give to a human being thus ill, and tell me how to use it."

She conquered as is woman's way; and returning, mixed her medicine, and, making the men hold Sultan, who by this time was too weak to resist much, she gave him his first dose. The second dose he made no objection to. Seemed to have come to an understanding 'twas for his good. "'Tis going to make Sully well," said his mistress; and the poor fellow gratefully licked her hand.

Well, she cured him, as she had said; and that dog—why, his gratitude and love towards Mrs. D—— were without measure and without bounds. He nearly pounded his heavy tail off, and smashed every thing to jelly, saying, "How are you?" and other things with it, when she was anywhere near. And he contrived to be near sometimes on rather odd occasions. One night, when Mr. D—— was away, Mrs. D—— was startled by hearing heavy breathing beside her. Raising up to see what it meant, she found Sully, supported on the floor, but his shoulders on the bed, and his big head on her husband's pillow, sleeping the sleep of the just. * * * *

He took very strong dislikes. There was a masked ball one evening at the D——'s. Among the guests were two disguised as thieves. These Sultan followed so closely that they could touch nothing. They did not have a very comfortable time with *their* masking; and that was not the end of it; for Sultan never could be made to respect or trust either of those gentlemen again. He would never allow them to come to the house unless some of the family were with them. One time Sully could not get to see his beloved mistress for a long while. At last her door was opened to him; and he joyfully entered. But at the sight of his mistress, all pale and propped up by pillows, he was amazed, and dared hardly approach her. She called him kindly, "Here, Sully, Sully! poor old fellow, come here." So he wagged that tail and advanced. But when he saw in Mrs. D——'s lap a baby, he gave her a look which no words can express, and instantly turning, marched majestically from the room. It was sometime before he would take the least notice of that babe, which he clearly considered as his rival, At length Mrs. D—— called him to the cradle. "Now, Sully," said she, "no more of this nonsense. Come and see the baby. She is one of the family, and you must love and take care of *her* as you do all the rest of us." That settled it. Baby thenceforth was Sully's

baby too. His great tongue lapped her whole face every chance he could get. Nobody could ever get the dog away from the house and grounds. He seemed to feel that he was responsible for the safety of every thing there, and leave he would not. One terribly dark night,—I think it was also stormy,—Saturday night, Mr. D—— failed to arrive from the city at his usual time. The fact was, he somehow or other got left at the wrong station, five miles from home. He had no lantern. He must go by the railroad, with deep ditches on either side. It was not very agreeable. He had taken but a few steps forward, when some large, heavy body rushed against him, startling him not a little. Was it possible? Yes, indeed; there was the Sultan, five long miles from home—come to hunt up the missing master. Glad enough was Mr. D—— of the Sultan's company. It would make an article which would fill the paper, were I to attempt to write in full this good dog's history, enough has been told to show that some dogs are far nobler than some men. Sully lies, now, in an honored grave, mourned over and never forgotten.—AUGUSTA MOORE, *in Our Dumb Animals.*

Perhaps this is the same dog that was accustomed to ring the dinner bell when he wanted his meals. One day the servant neglected to give him his dinner, and growing impatient with hunger, he caught up the bell which was rung every day at meal times, and sent a din through the house that startled every one. Of course he got dinner pretty quickly, after that, if he was not served in good time, he would seize the bell and give it a noisy jangle.

ANSWER TO GEOGRAPHICAL PUZZLE.

Take Cod (a Cape in Massachusetts) and soak all night; then shred up fine and cook in Milk, (a river in Montana); this and some Eggs (harbors in New Jersey) will be the principal warm dishes.

Some may like Onion (a river in Vermont) sliced very thin and well seasoned; now go to the Bakers (a Mountain in Washington Territory) for an indispensable article of food. Apple (five-eighths of a little town in Wisconsin) well stewed, will be sufficient in the way of fruit. Such a breakfast may be very cheerful if every one is politely on the Look-out (a Cape in North Carolina) to see that each one is well helped and cared for.

Briarfield, Bibb Co., Ala.

THE ABSURDITY OF IT.

It is all very well for poets to tell,
By way of their songs adorning,
Of milkmaids who rouse, to manipulate cows,
At five o'clock in the morning,
And of mooney young mowers who bundle out-doors,
The charm of their straw-beds scorning—
Before break of day, to make love and hay,
At five o'clock in the morning.

But between me and you, it is all untrue—
Believe not a word they utter;
To no milkmaid alive does the figure of five
Bring beaux—or even butter.
The poor sleepy cows, if told to arouse,
Would do so, perhaps, in a horn-ing,
But the sweet country girls—would they show
Their bright curls
At five o'clock in the morning?

It may not be wrong for a man in the song—
Or the moon—if anxious to settle,
To kneel in wet grass and pop; but, alas!
What if he popped down on a nettle!
For how could he see what was under his knee,
If, in spite of my friendly warning,
He went out of bed, and his house, and his head,
At five o'clock in the morning?

It is all very well such stories to tell;
But if I were a maid all forlorn-ing,
And a lover should drop in the clover to pop,
At five o'clock in the morning—
If I liked him, you see, I'd say: "Please call at three;"
If not, I'd turn on him scorning:
"Don't come here, you flat, with conundrum like that,
At five o'clock in the morning!"

THE BEAUTY OF HEALTH.

How cheering and charming is the young girl, full of life and energy, with rosy cheek, pearly teeth and sparkling eye. It does not lay her upon the sofa for a day to take a morning's ramble. Her complexion tells of wholesome, nutritious food, and you know by the rosy redness of her lips that her breath is as sweet as the new mown hay. That invalid wives very often lose all influence with their husbands is a notorious, yet not a singular fact, much as it is to be regretted. Nothing will so soon outweary patience or cool the warmth of affection, as the complainings and disagreeable accompaniments of ill health. Girls, if you would be valued, cherished, beloved, attractive and useful wives, cherish good health.

An Iowa editor recently announced that a certain patron of his was "thieving as usual." He declared he wrote it "thriving."

Physical Culture.

OVERTASKING THE STOMACH.

Dr. E. M. Moore, of Rochester, N. Y., commenting on the health of American farmers expresses the opinion that the most fruitful causes of disease among them are too severe toil and badly cooked food, giving the stomach a task beyond its strength. We doubt not there occur instances of overwork among those who actually put their own hands to the plough, but we doubt if many are injured in this way, in the South. Our climate does not predispose to excessive muscular exertion, but that we overtask the stomach is true enough, and Dr. Moore's remarks under this head may have a bearing here as well as at the North. He says:

I do not expect or desire that every cook should be a chemist, other than a practical one, carrying out the plans that others have developed. The land overflows with plenty. Now, I venture the assertion that, more than half the time, the breakfast of the farmer is composed of materials saturated with grease. If a beef steak is procured, it is fried in grease, every fibre, on the principle of capillary attraction, is coated over with a layer of fat, which the gastric juice does not dissolve, a most ingenious contrivance to prevent solution of the albuminoid substances. If a good piece of pork is used when it is all fat (and to which I raise no objection, if properly prepared,) he finds the accompanying vegetables, especially that physical basis of life, the potato, completely saturated with grease. Now, if the pancreas could pour its fluid on these materials first, the plan might be good, but no contrivance for interfering with proper digestion could be more perfect. Hard toil, immediately after food, will also interfere with the process. Similar food for dinner, and kept hot to meet the irregularties of serving, are the hard conditions presented to the stomach.

EQUESTRIAN EXERCISE.

Knowing you individually and collectively to be the friends of progress, I venture to hope for a modest corner in your widely-circulated journal on a subject that of late has come much before my mind's eye, namely, on the matter of riding schools. Now that one-half of the female population want to vote, and the other half do not know exactly what they do want, I propose to aid them in the discovery of that which, in this country at least 999 out of every 1,000 need, viz: good animal health, and where is it to be obtained so speedily and surely as on horseback.

That Americans are not a nation of horsemen is due to many causes; first, the severity of the winter, then the excessive heat of the summer, which leaves, at the North—here the South has the advantage of her better climate; only a late spring and autumn for the real enjoyment of out-door amusements. Again, the artificial lives of most Americans of wealth enervates and deranges the physical system until to walk or ride becomes an exertion. Mamma and papa never walk; both claim the undoubted right of free Americans to have a headache and dyspepsia, also to leave them as an inheritance to their children.

If I could do for American youth as I long to do, I would make one great holocaust of wagons and trotting harness, I would substitute hunting saddles therefore, and in a trice I would put young America on horseback. Then the next generation would not write such pitiable letters as those which appeared a few days since in the New York *Tribune*, when two American women declared that they, and, indeed, the female portion of the nation at large, were too weakly and delicate to undertake house-work, and that, therefore, a robust Irish girl was an absolute necessity in every American household. This, to me, is sheer nonsense. I do more hard work in one week than any score of American women of my acquaintance effect in one calendar month, and I enjoy uninterrupted good health. Now, how is it that Irish women of all ranks are blooming and buxom, even if sun and wind burnt, as they generally are? Simply because they live in the open air! and American women are feeble and delicate because they live in hot rooms and foul air. They prefer the bloom of the rouge-pot to the rougher glow of the bloom of high physical health.

There is no exercise so life-giving as that taken on the back of a fiery steed; but to make this safe and agreeable, the boy and girl have to be familiar with horse-back riding from their earliest years. Therefore it is that I would advocate the formation, in cities and towns and wherever practicable, of riding schools, that should command a wide influence, and give birth to a new era—one of rosy cheeks and sparkling eyes, of daring boys and courageous girls; youths that could show to advantage in an Irish steeple chase, or amongst the brilliant throngs of courtly Rotton Row. Under no circumstances of home or fashionable life is a young girl so attractive as when mounted on a first-class hunter; when with a quick eye and steady hand she lifts her horse through heavy ground, or raising him to his leap, she sits as cool and firm as though horse and rider sprung together from the master hand of the Grecian sculptor.

Middy Morgan
In Turf and Field.

CARE OF INFANTS.

One-third of all the children born die before they are two years old, and three-fourths of these perish unnecessarily—perish as a consequence of the neglect or ignorance of mothers. Most infants are physiced and fed to death. No medicine whatever, not the modest "catnip tea," should be given to an infant without the direction of the family physician.

As to food, the practice is, the moment an infant is noticed to cry, it is fed; the result is that in less than a week the little thing cries oftener from colic than from hunger, which may often be known by its vomiting soon after it is fed, or by its refusing to take food; the great, the essential point, is to feed all children at regular intervals; from the neglect of this, infants are made dyspeptic before they are a month old, and between alternate feeding and physicing, they go off in convulsions, water on brain, or diarrhœa. Notice at what intervals food is necessary, and feed only at such times, these being greater as the child gets older; next, keep the child abundantly warm; keep it constantly clean; let it be in the open air every day, and never allow it to be showered or bathed in cold water.

THE PIG AND THE MAN.

We want to show you two people, Dr. Dio Lewis says: One has four legs. They call him a pig. We want to see him eat. Now, when the fellow gets enough he'll stop. There! he won't eat another mouthful. You can't coax him to do it.

Let us look at another. They call this one a *man*. Watch him. He is at breakfast. He looks this way and that way. He can't see anything he wants. Now he tries a mouthful of strong coffee; that wont fetch it. He tries a spoonful of catsup; that's a failure. Now he tries a mixture of mustard and vinegar. At length things begin to work a little, and he is finally able to cram a lot of griddle-cakes and sausage, and sausage and griddle-cakes, and two or three cups of strong coffee, into his stomach. Which do you vote for? We vote for the gentleman with four legs.

A wit replied to a French physician who was marvelling how a certain abbe came to die, since he himself and three other physicians were unremitting in their attentions, "My dear doctor, how could the poor abbe sustain himself against all four of you?

A lady, who was not thoroughly posted in natural history, asked a friend who was going to Utah to bring her a couple of Mormons for her aquarium. She thinks they are some kind of an oyster.

Domestic Economy.

RYE AND CORN MEAL BREAD.

This is a favorite kind of bread among the farmers of New England, and it might be made use of with advantage, as a change from our perpetual corn bread, wherever rye is grown. The *Science of Health*, gives the following directions for making it; but yeast or baking powders can be used if preferred:

For a small rye-and-Indian loaf, take one quart each of rye and corn meal, scald the latter with boiling water enough to wet it thoroughly, then add one gill of molasses, the rye meal, and warm water enough to make the whole as thick as can well be stirred with a large iron spoon; make it into a thick loaf—a two-quart pan will suit this quantity; but whatever the quantity may be, the loaf is better to be as much as three or four inches thick. Smooth it over with the wet hand, and place it on the top of the stove, where it will simmer, but not burn; the steam thus generated in the bottom of the loaf will pass up into it and make it light throughout; this will be shown by cracks on the surface, and in a hour and a half it will be ready for the oven; bake it with medium heat three or four hours. If less crust is preferred, it may be steamed three hours, and then baked one hour. If it comes out sticky and heavy, you have wet it too much, or the meal is too fine; if hard and firm, it was not wet enough. No absolute rule can be given for the proportions of water and meal, for some meal requires more water than others. Practice only makes perfect in this as in all other bread making. But this bread is worth some effort to learn to make it well. It is very sweet and tender; and if the corn and rye are new and good many prefer it without the sweetening. This method of raising, which supersedes the necessity of using yeast or powders, improves its sweetness; for yeast sours Indian meal, and the alkalies burn it. If this loaf be made late in the day, and left in the oven over night, with the fire covered, it affords a fine breakfast dish. It keeps sweet a long time, full two weeks in cool weather, though it should never freeze. It improves in quality for the first few days, and may be freshened at any time by toasting or steaming. The crusts if not liked can be taken off and steamed in a close jar or pipkin, over an equal quantity of apples, even full of water; and when tender, thoroughly stirred, in making a good side dish for dinner. If a name is wanted, call it "Brown Ben."

How to make Toast.—A dish of good toast is a rarity and is an enjoyment. For breakfast few things surpass it, to those who

are accustomed to that dish at that meal. It is light, digestible and reliable, and is not very expensive. A cup of tea or coffee, with a baked Spitzenburg, or a dish of any other sub-acid in addition, will make a satisfactory meal to a reasonable man. In toasting bread the following rules should be observed: Warm your bread well, by changing the sides of the slice when heated through, brown as is desired. There should be rather little than much browning, and the slices should be quite thin, say a quarter or three-eights of an inch, no more. But do not scorch; avoid that in all cases. The philosophy in browning is to take your time until you are done. Where the toast accumulates keep in a hot dish, but use as soon as possible. What is desirable in toast is the rich color and flavor formed by changing the starch into dextrine or gum. Heat evaporates moisture in bread as well as elsewhere. The moisture that escapes from toast leaves the bread light, soft and porous inside.

A Substitute for Washing Soda.—For washing delicate fabrics the hyposulphite of soda is much better than common soda. It does not attack the skin of the hands, nor the articles to be washed, while it is an effective bleaching agent, and removes many kinds of spots better than anything else that can be used. It is now manufactured on a large scale for photographic purposes, and is quite cheap.

Fire-Proof Starch.—To each bowl of starch add one teaspoonful of Epsom salts, and dissolve it in the usual way, by boiling. Articles starched with this will be rendered, to a certain extent, fire-proof.

RECIPES.

Sea Foam Pudding.—Four cups flour; two teaspoonsful Sea Foam Powder; one cup sugar; one cup butter; one of raisins; one of currants; two eggs; a little salt; a pint of milk; spice with nutmeg or allspice; and flavor with lemon, vanilla, or almond. Put in a bag and boil or steam three hours. Serve with brandy or wine sauce. A dish for king or president.

Apple Melange.—Stew the apples perfectly soft and sweeten and spice to taste. Beat the whites of four eggs with pounded sugar till smooth like icing; spread it over the apples and bake till a light brown. Serve with cream. This makes a very nice dessert. In the absence of green fruit, dried fruit may be used as a substitute.

Indian Pudding.—One pint boiling milk; two eggs; a tablespoonful butter; a teaspoonful cinamon; half cup flour, and enough Indian meal to make a good batter; stir in two teaspoonsful Sea Foam Powder and bake quick. Rich sauce.

Notes and Memoranda.

SCIENTIFIC MEMORANDA.

Manuring Seeds.

Prof. L. Lableaux, of Paris, France, has been experimenting for the last six years on the different fertilizers and compounds, for the purpose of preparing and rolling all kinds of seeds and cereals before planting. After many failures his efforts, it is claimed, have been crowned with great success.

The several years experiments with the rolling and steeping seeds in the different fertilizers, such as ammonia, guano, coal tar when in excess, the nitrates, carbonates, and nearly all of the commercial fertilizers and compounds of the day, has resulted in failures, so far as increasing the yield was concerned; all acting too strong and stimulating when made to adhere to the tender seed for its first start. The Professor then turned his attention to those simple compounds, that were at first mild and nearly neutral when applied in the earth, but which gave up their properties gradually, and had the greatest affinity for ammonia. The principal part of these compounds are bones, burned until they become white, gypsum or land plaster, and crude phosphate of lime. The phosphate of lime is burned until some quick-lime results, then they are ground fine and mixed together in such proportions as was proved by the different experiments to be the most effectual.

Of all the known combinations, none attracts more ammonia from the atmosphere in a certain given time; but even this failed, to a certain extent, until he was able to attach a sufficient quantity to each seed. To make a marked effect in this he was successful by the aid of a mucilage which he claims to be the crowning success of his experiments. The mucilage, which is the secret of success, is of itself a combination forming nearly all the elements, and fit food for the infant seed in its first struggle for existence. A small portion of coal tar is combined to prevent the ravages of birds and insects.

The Floras of America and Japan.

Professor Asa Gray in his late address before the American Association for the advancement of science, points out some singular coincidences between the plants of the United States and those of Japan. Our *Rhus toxicodendron*, or poison-ivy, is exactly repeated in Japan, but is found in no other part of the world, although a species like it abounds in California. Our other species of *Rhus* (*R. venenata*,) commonly called poison-dogwood, is in no way represented in Western America,

but has so close an alliance in Japan that the two were taken for the same by Thunberg and Linnæus, who called them both *R. vernix*. Our Northern fox-grape, *Vitis labrusca*, is wholly confined to the Atlantic States, except that it reappears in Japan and that region. *Wistaria* was named for a woody leguminous climber, with showy blossoms; native of the Middle Atlantic States. The other species which we prize so highly in cultivation, *W. sinensis*, is from China, as its name indicates, or perhaps only from Japan, where it is certainly indigenous. There is a shrub, *ellittia*, which is so rare and local that it is known only at two stations on the Savannah River, in Georgia. It is of a peculiar structure, and was without near relative until one was lately discovered in Japan. A specimen of a peculiar plant was detected in the herbarium of the elder Michaux, who collected it somewhere in the high Alleghany mountains, more than eighty years ago, since which no one has seen a living plant, or knows where to find one. At length the same plant is found in Japan. This close relation between the floras of the two countries may explain the mystery of our Japan Clover, (*Lespedeza Striata*) which, it is not unlikely, belongs to both.

Is our Climate Changing?

Prof. Daniel Draper, Director of the Meteorological Observatory, Central Park, New York, quotes in the *Popular Science Monthly* various statistics which seem to answer this question in the negative, contrary to popular opinion. In commenting on these statistics, Prof. Draper says: "The general conclusion which this examination seems to warrant, both as regards rainfall and winter climate, is this: that there has been no change in the lapse of many years. None can be substantiated as having occurred within a century. This proves that surface changes through agriculture, drainage, etc., give rise to no appreciable meteorological effect; and that the public opinion which asserts such an influence is altogether erroneous."

The Healing Breath of the Pines.

The air of the pine forests is always grateful to the senses and soothing to the lungs, and it is not difficult to believe that it may exert some direct curative influence. The idea of pine-trees exercising a balmy influence is a very ancient one. Pliny considered that the air of pine forests was more useful in asthmatic difficulties than the voyage to Egypt, recommended in such cases, in those days. But besides merely inhaling the air of pine forests, people have made much use of the pine in baths—vapor baths and inhalations. Even this is not entirely modern; for the ancients recommended the internal use of decoctions of strobili and of pine-tops, and thought pine-nuts very useful in diseases of the chest; and at a modern time, besides the use of internal drinks made from the spruce and the tar-water so long in vogue, we had inhalations of tar and of various resins.

A Simple Deoderizer.

One pound of green copperas, costing seven cents, dissolved in one quart of water, and poured down a water-closet, will effectually concentrate and destroy the foullest smells. On board ships and steamboats, about hotels and other public places, there is nothing so nice to purify the air. Simple green copperas dissolved under the bed in anything that will hold water, will render a hospital or other place for the sick free from unpleasant smells. For butchers' stalls, fish markets, slaughter houses, sinks, and wherever there are offensive, putrid gases, dissolve copperas and sprinkle it about, and in a few days the smell will pass away.

Carbolic Toilet Water.

The *Boston Journal of Chemistry* gives the following recipe: Crystalized carbolic acid, 10 parts; essence of mille-fleurs, 1 part; tincture of quillaya saponaria, 50 parts; water, 1,000 parts. Mix. The above should be employed, diluted with ten times its bulk of water, for disinfecting the skin, for washing the hands after any risk of contagion, etc. The *tincture of saponine* in the above is made by taking of bark of quillaya saponaria, 1 part, and of alcohol (90°) 4 parts. Heat to ebullition, and filter.

Iron for Animals and Plants.

If iron is withheld from animals, they sooner or later show signs of disease, which in man is attended with a peculiar greenish pallor of countenance, great weakness, and general disturbance of the functions. It has been

observed that plants grown in a soil without iron are affected in a similar way—that is they are less thrifty, lose color, and give other indications of disorder. It is, therefore, inferred that iron is quite as essential to the growth of plants as to the growth of animals.

FACTS AND FIGURES.

The Raleigh, (N. C.,) *Sentinel*, in a very forcible article on the recuperative powers of the South, publishes the following facts and figures taken from the statistics, which are calculated to inspire our people at least with a ray of comfort: "In 1860 the exports from Southern ports amounted to $208,467,362. In 1870 the exports amounted to $209,560,500. So, with all our manifold political vexations and persecutions, the South actually exported over one million dollars more five years after the war than it did before the war. We are surprised to see that the importations in 1871 were over two millions more than 1860. In the latter year they were $40,076,746. In 1871 they reached $42,330,437. This shows the productive energies of the people.

The Palatka, (Fla.,) *Herald* says of the great Okeechobee Lake: "It is large enough to float all the navies in the world. You can there see animals nowhere mentioned in books on animated nature. This lake is sixty miles long and from ten to twenty miles wide. It is far beyond the habitation of civilized man. Its shores are seldom troubled by hunters, and even the Indians keep far south of its borders."

The Food Journal draws attention to the wasteful system of peeling potatoes before cooking. In most cases they cook better in their "jackets." The skins are much more easily removed after cooking, and where the consumption is considerable the saving would be worth regarding.

Officers in the navy prevent rust and preserve the brightness of their instruments by smearing them with equal parts of olive oil and carbolic acid—a plan which house wives and husbandmen might possibly practice with profit.

PERSONAL NOTICES.

At the close of the war Judah P. Benjamin, Secretary of State of the late Confederacy, went to London, where he was naturalized, and upon complying with the necessary conditions was admitted to practice in the highest courts of Great Britain. His progress has been so rapid at the bar that he has heen appointed Queen's counsel, and it is now intimated by the English papers that he will be raised to the Bench as soon as a vacancy occurs.

——An exchange thinks that the Russian Princess Alexandrowa Troubescheneff, instead of joining the Onieda community ought to get married, if only to obtain a change of name. Suppose she should wed Mr. Schffzkwtz of Nebraska? Would that be consonant enough?

——The centenary of the death of Linnæus, the Swedish naturalist, was celebrated at Stockholm on the 10th of January, 1873, when a statue of him was unveiled.

——Miss Virginia Vaughn, of Virginia, lately lectured in Boston on "The Development of Poetry," achieving a brilliant success.

——Mr. Henry Perry, of Savannah, has been elected a teacher in the Agricultural College, to be opened at Dahlonega in January.

——A. H. Stephens is now sole editor of the Atlanta (Ga.) *Sun*, Mr. J. Healy Smith, managing editor, having retired.

MERE MENTION.

The New York Industrial Exhibition Company propose to erect a building for a permanent exposition of the arts and industries of the world, at a cost of $7,000,000.

——Brockport, N. Y., carries the banner in bean raising. One hundred thousand bushels have already been shipped from that town this year, and $200,000 returned to gladden the hearts of those growers of beans.

——The rice crop of the South, for 1872, is estimated at 84,000 casks, of which South Carolina produced 45,000 casks.

—— America's wheat shipments to England in September, were 3,087,139 bushels against 1,265,840 in the corresponding month of 1871.

——Florida proposes to supply Cincinnati with tropical fruits.

EXCHANGES.

The *Popular Science Monthly*, (D. Appleton & Co., New York, $5 a year,) continues to give its readers all that it promises and more. The February number is particularly good, and has a fine portrait of the distinguished Naturalist Darwin.

That old favorite, *Arthur's Home Magazine*, (February number,) is gladly placed on our exchange list; also, the *Children's Home*, from the same publishers, T. S. Arthur & Son, Philadelphia. Terms of the former $2.50 a year, and of the latter $1.25.

The *Atlantic Monthly*, for February, (Jas. R. Osgood & Co., Boston, $4 a year,) is received, and is apparently fully up to its high standard of excellence, but it came to hand too late for more particular notice.

Scribner's Monthly, for February, (Scribner & Co., New York, $4 a year,) comes to hand just as we are about to go to press, with its usual attractive table of contents.

Journal of Industry, is the name of a new monthly devoted to "the industries of the country." One dollar a year. Address *Journal of Industry*, Richmond, Va.

The *Working Man*, (Tilman R. Gaines, Columbia, S. C., $2 a year,) is another candidate for the patronage of our people, and an additional laborer in a good cause.

CATALOGUES RECEIVED.

"The Flower Garden, a Quarterly Magazine of Floral Progress," with Seed and Plant Catalogue of Beach, Son & Co., (formerly C. L. Allen & Co.,) Brooklyn, New York. [$1 a year, with one dollar's worth of seeds.]

"Descriptive Catalogue of Scuppernong and other Native Grape Vines." A. J. Butner and D. P. High, Whiteville, Columbus Co., North Carolina.

"Catalogue of Fruit and Ornamental Trees, Plants, Vines, Roses, Bulbs, Roots, &c." McArthur, Son & Co., Meridian, Miss.

"Dreer's Garden Callendar for 1873," with Seed and Plant Catalogue. Henry A. Dreer, Philadelphia.

SPICY BREVITIES.

One of the saddest instances of woman's unfaithfulness with which we have ever met was that of the wife of a man in Syracuse. It seems that the couple had arranged that for six months the husband was to get up and make the kitchen fire, and that the wife was to perform the task, for the succeeding six months. The man's half year expired on the second, and on the morning of the third the woman suddenly died. He is nearly broken-hearted over his affliction. He says if he could only have foreseen this bereavement, he would have shuffled her out of bed at daylight every morning since August.

A sportsman tells of a singular instance of a gun hanging fire. He had snapped his gun at a gray squirrel, and the cap had exploded; but the piece not going off, he took it from his shoulder, looked down into the barrel and saw the charge just starting, when, bringing it to his shoulder again, it went off and killed the squirrel.

"If I am not at home from the party to-night at ten o'clock," said a husband to his wife, "do not wait for me." "That I won't," replied the lady, significantly. "I'll come for you." To prevent difficulty, the gentleman managed it so as to be home precisely at ten o'clock.

They tell about a sleepy and prosy clergyman up country who prayed one evening that "the inefficient may be made efficient, the intemperate temperate, and the industrious dustrious".

The strangest case of absence of mind that we ever heard of, was that of a monkey out in Paducah, which used to sit out on the fence in a reverie, and try to pick its teeth with the end of its tail.

——Opium is imported into the United States at the rate of five millions of ounces a year, at a cost of two millions of dollars in gold.

THE
Rural Carolinian.

Progress with Prudence, Practice with Science.

D. H. JACQUES, Editor.

Vol. IV.] CHARLESTON, S. C., MARCH, 1873. [No. VI.

Thoughts and Suggestions for the Month.

Corn planting is one of the principal operations of this month, and we hope it will no where be neglected. Corn is indispensable, and it should be made at home. It may not be a remunerative crop on all our cotton lands. It certainly is not always made so, nor is cotton; but there are good corn lands on almost every plantation—lands on which good crops can always be made, with proper cultivation. In our hot climate, where droughts are severe and frequent, during the summer, corn should be planted early, so as to avoid, in part, at least, the danger from that source. Early planted corn, it is true, may be seriously injured by drought, but it is less liable than that planted later. On level dry lands, we prefer to plant in checks, but on hill-sides the drill system is preferable, as, if the rows are run around the hill on a level, as they should be, the ridges prevent washing. Some early variety may be planted, with advantage, for a part of the crop. We have succeeded well with Pennsylvania Gourd Seed, which will mature a month earlier than our common kinds, and may escape droughts that would prove fatal to later crops.

———Cotton planting will be in order soon. Do not let the proper season find you with your land unprepared. Sub-soil your cotton land, at least the centre and two side furrows of each bed, unless, after a fair trial, you have ascertained that on your soil it does not pay. We can give only general rules. Experience must determine the exceptions. The proper selection of seed is a very important matter in cotton planting. It is the worst of bad management to plant inferior seed, because it would cost something to buy the best; but, as we have repeatedly urged, every planter should, by continual selection and high cultivation, make his own seed, and take pride in having the best. Begin with the Dickson Seed, or any better sort, if there be any better, and improve upon that till you have something as much better than the Dickson as the Dickson is better than the common. The article in this number on "Cotton in Checks," will repay a careful perusal. It was written by a practical planter of great experience. We are accustomed to boast of the perfection to which cotton culture has been brought in this country, and with

some reason, but there is still room for improvement—something to learn by those not too wise in their own conceit to accept new truths.

———Oats may yet be sown, and it is not necessary to repeat our advice, as reiterated in previous numbers, as we presume all who can be moved by persuasion or argument have already got in, or are prepared to get in, a large acreage. Sorghum should not be neglected. Be sure and have enough of it for your own supply of syrup, if no more. Doura corn, Guinea corn, millet, etc., where seed can be procured, should also have their place on every plantation. Jute is one of the most promising new objects of cultivation, and should be carefully experimented with by all who can procure seed. Especially should it be tried on our rice lands, which bid fair to be abandoned, unless some other and more profitable crop can be substituted for rice.

———Croaking is not confined to the South, nor is farming without its drawbacks even in the great, fertile West. Here is what an Illinoisan Jeremiah has to say in the *Country Gentleman*, of the condition and prospects of the agriculturists of the "Garden of the World": "It would not hurt him [a would be immigrant] to stay two years, and learn how the Illinois farmer grows corn and oats at 20 cents a bushel, cattle at 2½ and hogs at three cents a pound, is taxed ten per cent. on the assessed value of his property, pays 5 cents a mile when he takes the train, hauls water two miles when it is dry, gets sloughed in his own door-yard when it is wet, harvests with the mercury at 110° in the shade, and feeds his cattle with the thermometer at 34° below zero." Now, though we suspect this picture is much too highly colored, it serves to show that our little troubles, here in the South, are not so bad as they might be, and that we need not envy the farmers of less favored regions because they possess the one advantage of a more fertile soil.

———There is a disposition on the part of some of our farmers to underrate the advantages of their profession, and to express doubts of its profitableness, if they do not even go further and say openly that "farming don't pay." Well, it don't pay some people who pretend to be farmers, and they do not deserve to be paid for their lazy, inefficient dawdling. Trade would not pay, nor law, nor medicine, if conducted in the same way. It is intelligent skill and persevering industry which pays in all branches of business. Ask the successful mechanic how he makes his trade pay, and he will tell you that it is simply the result of his knowledge of his business—the skill acquired by years of careful application of scientific principles to his art—and of judicious management. Farming pays in the same way.

———The importance of carefully keeping accounts on the farm has been sufficiently insisted upon in these pages. Either in the same book—"The Rural Accountant" of Messrs. Walker, Evans & Cogswell is a capital one—or in a separate volume, notes and observations should be constantly jotted down for future reference. We cannot always safely trust to memory for the important facts drawn out by our experience. A scrap-book is another very useful auxiliary. Clip from the papers such valuable suggestions as may be of future use, and which otherwise would be lost, and paste them into such a book, making an index to it, so that any subject treated may be readily found.

Notes on Planting.—III.

It is proposed in this number to speak of the live stock of the plantation.

Horses.

The mule and the ox are so thoroughly adapted as beasts of burden to our warm climate and rude laborers, that the horse is generally, except from necessity, reserved for light draft and the saddle. To one who has a taste for horses, there is no more delightful amusement than rearing enough of these generous animals to at least supply his own wants; and in the hands of one whose heart is in the business, on a cotton plantation it will pay to that extent, or even so far as having an occasional colt for sale. It is the poetry of stock-raising, but the planter, if not a horseman, had better buy ready-made the few saddle and light draft nags he needs; and, with an eye upon the balance sheet, confine his attention to their humbler congener,

The Mule.

The Kentucky mule seldom costs less upon the plantation than one hundred and fifty dollars, most frequently more, and his average working life is about eight years. When mules were first introduced into this country as farm animals, they were generally bred from the small jack, of African origin, and were smaller, hardier, and longer lived than they have since become from the use of the larger and coarser Spanish Jack. Longevity seems to have been one of the chief merits claimed for the mule by the agricultural writers of that day; and with individual instances in the mind, some persons may now be startled at the short average period of work here attributed to these animals. This estimate is the result of a somewhat extended experience with Kentucky mules, managed with as much care as can be gotten from overseers and negro laborers, and very little doubt is entertained of its general correctness. The annual depreciation upon each mule, or his wear and tear, including interest at 10 per cent., is, therefore, about thirty-four dollars. One mare for every eight mules, bred to the jack, will keep up the stock, furnishing, after the third year, annually a fresh mule to take the place of the most inferior worker, which, sold before it is worn-out, will pay in most cases more than the cost of rearing the substitute. The services of the mare as an extra plough horse, or the manager's saddle nag, will fully repay her feed. It must, indeed, be a thriving and well managed plantation, upon which any single item will show so satisfactory an account as a good mule mare properly cared for; and yet in South Carolina, probably, nine out of ten mules met with are purchased from the West.

In the selection of the mare, attention should be given to soundness, docility and milking qualities. Fifteen and a half hands is size enough, and a half or one-fourth of thoroughblood is desirable. The writer once bought a medium sized mare for $110, said to be over twelve years old, and who traced to Sir Archy, though with several ignoble crosses. She made five crops, ploughing regularly with the mules, and in this time brought four mule colts, which at maturity would have been cheap at $175 a piece. She herself was then sold for $75.

The mare should drop her foals in August or September, after the ploughing season is over; by Spring the colt is then off her hands. She should do as little teaming as possible, and never be worked in a gin. The run of the pea fields and a rye and barley lot will carry the foal well through its first winter; after which it will almost raise itself. But there is no economy in starving young stock of any kind, and to be successful, the young mules must have grain when necessary, to keep them in good growing order. They should be broken in at three years old, but not put to full work till four; and for plantation purposes, on the light lands of which we write, the medium sized mule, of 14½ hands, is the most efficient and economical.

To the mule, even more than the horse, a due supply of long forage is necessary. It may be of a rougher character, but its absence and too much reliance upon grain is sure not only to tell upon his thrift, but to show itself in colic. The irregular supply of water, and drinking it cold, when the animal is heated, is also a frequent cause of this dangerous disease. In ploughing during the hot months, the mules should be watered five times a day—on going out in the morning, at 9 A. M., at noon, and upon going out and returning in the evening. If the water is from wells, the troughs should be filled long enough beforehand for the sun to take the chill off. It is, beyond doubt, best to feed three times in the twenty-four hours. The mules' stomach is small, and alternations of distension and emptiness can neither promote his health or efficiency in labor. Convenience, however, generally requires, that in the summer he should be fed only at noon and at night; while in the short winter days, with frosty mornings, the most valuable time for plough-work is lost by a longer stoppage at noon than to water him. He must, therefore, be fed then only at night and morning. Whatever the habit of the plantation is at the time should be adhered to, and irregularity avoided.

The bridle and the collar are the only parts of the gear requiring special notice here. None other than open bridles should be allowed upon a plantation. Blinkers are unnecessary upon either horses or mules, or in any draft. The animal is safer to the driver and more comfortable to himself without them, even when properly adjusted, which, with a negro teamster, they seldom are. Their only use is with a sluggish animal, that is always watching for the whip. Such an one it is best to get rid of at once. The collar is a difficult subject to manage. Beyond fitting properly, its requisites are to be non-absorbent of perspiration, and to press evenly, without friction. An absorbent collar acts like a poultice in softening the skin, and the friction from the shoulder, in movement, makes sores a necessary sequence. A wooden collar, or block hames as they are generally called, possesses the quality of non-absorption, and when properly fitted, is superior to either the stuffed leather collar, or one made of shucks or moss. Friction is successfully avoided by interposing a false collar, detached from the bearing collar, and upon which the latter will rub instead of upon the skin; and this should not be the padded affair sold by the saddlers, but made of a single thickness of the stoutest harness leather. It is three or four inches wider than the bearing collar, and is kept immovable upon the shoulder by a light martingale. A complete arrangement would appear to be a block hame and leather false collar for each mule. The

leather false collar, however, is not non-absorbent. The sweat and hair cakes upon it, and the leather stiffens, requiring cleaning and oiling. Beside, friction ceases to be of much consequence when the non-absorbent wood is used, except with young animals, or upon shoulders already galled. In practice it has been found best to use the block hame alone, and keep one or two false collars to be used when necessary, for short periods.

It must be mentioned, that in teaming, when block hames are used, pads become necessary upon the top of the neck, for the wheel mules, to prevent injury from the top hame strap. It is better, however, to keep for teaming a set of wheel harness with traces, breeching, and ordinary leather collars, complete, and to be used for no other purpose. The ordinary plough-gear will answer for the lead animals. Farm harness is made and repaired quicker, cheaper, and stronger with copper belt rivets than by sewing.

Oxen

Are cheaper than mules in their first cost, and when their period of service is over and they are fattened for the shambles, are safe to return the original outlay. They are slower but stronger in draft and may be kept at less than half the annual cost in feed. Their services in teaming, harrowing, or in double ploughing are invaluable. They may be worked with collars and traces in single ploughs, but it is not deemed advisable to use them when their strength will not compensate for their slower movement. The yoke should be straight; slightly cut out to fit the necks; as light as is consistent with strength; long enough to let the animals move comfortably on parallel lines, and bows of half-round inch iron, are strongly recommended. One set will last half a life time, and if made to fit they never chafe. A wooden bow will splinter, and before a careless teamster notices it, the neck of the poor brute is often badly frayed. Grass fed oxen are as worthless for labor as grass fed mules, and when of full age and size, few oxen at pasture are restrained by any but fences of unusual strength. It is not therefore found desirable to have more than can be kept up and regularly employed in their proper work. On most plantations, this will be about one yoke to six mules. They should be fed regularly the year through on substantial food, and like working mules and horses, should only have a run at grass as an alterative. Indeed from the disrespect for the law of enclosures which both mules and oxen are wont to manifest, the soiling system is the most convenient in supplying both with what green food they need. Thus treated and judiciously driven, oxen will be found to stand the heat and do their work unfailingly. An excellent feed for hard working oxen, is a mixture of cracked corn and cotton seed meal, (a half peck of each per day,) with as much corn shucks as will be eaten without waste. Instead of the cotton meal the same quantity of seed may be substituted, either soaked in water or slightly rotted. Probably the seed hulled by a machine would be better, as the rotting or soaking only serves the purpose of partially avoiding the trouble of the woody hull and adhering lint.

In heavy teaming, a capital combination, is a yoke of oxen at the wheels and a pair of mules of medium quickness in the lead. The oxen take the jerks of rough roadways better than mules at the wheels, and their speed is increased by their

disposition to keep up with the mules. Such a team will do the work of five mules.

Hogs and Cattle

Should only be kept upon a cotton plantation in sufficient numbers to utilize the waste of the barn-yard, and the refuse of the field crops. To this extent good breeds well cared for are profitable. Beyond it, where special pasturage must be provided, or the expensive contents of the corn-crib relied upon to any considerable extent, it will not pay. You can buy your beef and bacon cheaper than you can make it. One brood sow to two mules, and two cows to three mules is about the right proportion of this kind of stock on an ordinary plantation in this region, without special advantage of branch or swamp pasturage. There will then be of all ages about ten head of hogs, and nearly ten head of cattle to the mule. These with attention will very nearly, if not quite, supply the necessary amount of bacon for the laborers; keep up the supply of working oxen; give all the beef needed for the special occasions upon which only it is desired by negroes; and the milk and butter may be sold. The planter's family being a variable quantity, both in number and style of living, its supply and consumption is not considered in any of these estimates. Indeed it may, in passing, be stated that no planter can tell what interest his investment is paying, unless the family is upon the accounts treated as a stranger, and the plantation credited with every item of its use and consumption.

For hogs and cattle to be raised in this way, the native breeds, with one, or at most two crosses of higher blood, are the best. In cattle, the Devon and Brahmin crosses upon the native make an excellent plantation animal. In hogs, the Berkshire or Essex crosses are preferred. A Chester White, mangy and sway-backed, rooting for a living in an old field pasture, is a spectacle to make angels weep.

It is claimed by those familiar with them, that sheep may be advantageously substituted for cattle in consuming the waste of the field crops. It is probably true; but with the present surroundings of the planter in this region of the country, though sheep thrive better no where else, it is not thought that they can be advantageously kept, except in sufficient numbers to warrant the protecting care of a shepherd.

Incidental to the live stock, which more or less must necessarily be kept on the plantation, is barn-yard manure—a matter of importance as a secondary product, and as such, but no further, to be carefully looked to. Chemical fertilizers and cotton seed are, and must continue to be, the chief reliance for manure of the cotton planter in the pine lands of the South. The turning under of green crops is a valuable adjunct not to be neglected in exceptional instances; and so with the folding or hurdling of stock. This last is certainly the best mode of using the droppings from stock, and more particularly sheep, when the number is large enough to admit the watch in an out field of a special stock minder. But with the small number proposed in our scheme to be kept, their manure must be utilized at the barn-yard. Where the farmstead is arranged, as indicated in a previous number, for housing nightly each animal, the year round, the following plan of making compost has been found to work well.

After the crops are harvested in the winter, fill each stall and the whole stock

yard, knee deep, with pine and oak leaves from the forest. As the bedding of the stalls becomes wet from use, sprinkle over it gypsum, about a peck to each, and put on more litter from the stock yard. Fill again the stock yards, by that time emptied of litter, after laying by the crops in summer and continue the process of transfer to the stalls. In the leisure of winter dig out the contents of the stalls and compost thus: Having put down a layer of untramped leaves, a foot or more thick, for a foundation, add a layer of the same thickness from the cow sheds, then one from the mule stables and so on alternately. Over each layer, sprinkle freely a mixture of lime and salt, in the proportion of one bushel of lime to a peck of salt, and water enough to bring it to the consistency of thin whitewash; cover with at least a foot of untramped and unsprinkled leaves. In six weeks, it will be a rich compost of uniform value—will cut like a cheese; and if you should have buried in the heap a dead cow during the fermentation that ensues, at the end of that time you will find even the bones decomposed. Six or seven weeks is long enough for this compost to stand in the heap, and if not turned under as soon as hauled into the fields, the piles in which it is placed should be covered with earth. For every forty-five well packed bushels of forest litter hauled in and so treated, something more than fifteen bushels of compost may be expected; and for every mule, with the proportion of hogs and cattle above recommended, from six to seven hundred bushels of compost can be thus secured. Under ordinary circumstances, the labor of hauling in the litter, of making up the heap, and the purchased ingredients, will make the cost of the compost at the barn yard about three cents per bushel; and its manurial value on the first crop will not be greater than that much worth of commercial fertilizer. It will however be more permanent in its effects. While fertilizers, according to Prof. Emil Wolff, (and he is probably right,) yield up to the first crop three-fourths of their value; compost expends on the same not more than from one-third to one-half of its strength. Against this is the greater expense of applying the compost.

In our next will be discussed the machines of the plantation.

LOW MIDDLING.

Immigration and Labor.

No two subjects are discussed with greater contrariety of opinion throughout the South than those of Immigration and Labor. Immigration! Why, many agriculturists dream dreams of coffers full as the result of turning the tide Southward from the Old World, every immigrant being with them a skillful laborer, who has only to be imported to make our waste places blossom as the rose.

And what of Labor? Why, nothing but change the color of the laborer's skin, and depression bids adieu to the land, and the Sunny South robes herself in the verdure of a modern Eden.

But others believe the flow of immigration a stream of doubtful fertility, carrying along in its current a muddy solution, that leaves a poisonous sediment; and advocate the existing labor of the South as incomparably the best for her present employers. Many "ifs" and "ands" can be attached to either of these two positions.

The South wants population, but if that population be people with more brawn than brain, we are better off without them. Labor is not scarce enough in the South to demand an influx of immigrants to supply the deficiency. The South needs capital more than laborers, and hence men of money, be their funds pence or pounds, should be invited to come and settle amongst us; and all such who invest in real estate should be met with a welcome, and offered an inducement, come whence they may. The simple hireling, with naught but muscle to commend him, would be wiser to stay away than to come. No day laborer can compete with the negro in the employment of the former slave-owner, or in the cultivation of Southern staples. The wants of the negro laborer are a warm back and a full belly. These supplied, and he is capable of wonderful endurance. The wants of the white laborer are manifold, and sometimes cannot be supplied at the South. Fresh meat as a daily diet he requires, and this cannot be had at all times in Summer. Sugar, coffee, flour, and a feather bed, are as necessary to his contentment, as they are superfluities in the rations of the negro laborer. Every Southern born planter knows these are facts, and for this reason he should depend upon the labor to which he has always been accustomed.

Much complaint is urged against the negro, because he is treacherous and ungrateful, and idle, and worthless, generally. Be it so. His is more than this. He is ignorant, and he is an inferior being to those amongst whom Providence has cast his lot. Were this not so, we of the South would owe him a debt of gratitude more valuable than freedom itself for his docility, faithfulness and quiet, from 1861 to 1866. Imagine the position of the two races reversed in those years of strife and trial, and who could have foretold the consequences?

But does any Southern planter know that the hirelings of our own race are any less treacherous, any more worthy, or any more industrious than the negro? The native born whites who have lived to maturity without accumulating property in the past, will never do so in the future, and as a class, are the most objectionable employees. The better class of immigrants who come to America in search of happiness or wealth, seldom delay in the Eastern cities, but move directly westward where Government lands can be bought for a song, or purchased for the "squatting;" and such people generally make valuable citizens, and add wealth to the country in which they settle. But in their wake flows the tide of those humbler in life, who come here either because they can or must come, and who are too ignorant to have any definite purpose in view. They have heard America was a free country, and with them freedom and license mean the same thing. The most worthless of this class generally eke out an existence where they land, unless pinching poverty drives them southward or to Northern almshouses. Many of them, however, move by fair means or foul westward, stopping here for a job, and there for a week, ultimately aiming to secure that "forty-acres" without the mule, which Uncle Sam has promised them on his Western frontier. So constant and regular is this westward current, that in many portions of the North and Northwest, farm laborers are exceedingly scarce, and tenfold more irreliable than our colored laborers. They frequently engage for a month, payable weekly, and at Saturday night, on receipt of the first week's wages, they bundle up and are off

before Sunday morning. This greatly discourages planters, who though abundantly supplied at the pitching, have but little idea whence is to come the labor to cultivate the crops. "To set up for myself" is the idea, and of course this can only be done without money where lands have no marketable value.

From one-fifth to more than one-half the population of several of the Northwestern States are actual immigrants, and wherever these people have congregated in greatest numbers wealth has accumulated most rapidly; for this reason many superficial thinkers assert, if we only had such an influx southward for a few years we would grow immensely wealthy, and almost instantaneously prosperous. Such is not the case, however. A sudden increase of population in a community peculiarly agricultural, where the staple product is food for neither man nor beast, would create an army of consumers that would impoverish the land and revolutionize the entire system of agriculture. Grain-growing and stock-raising countries can, therefore, be enriched by the same process that would impoverish a cotton country. Food being cheap, labor must be cheap, hence the better means of building railroads, establishing factories, exhuming minerals, and otherwise developing the material resources of the country.

But had the South this incessant stream of immigration we would be ruined. Cotton is essentially *the* product of the South, and in these latter days experience has taught the world, that the successful cultivation of this crop is a science only appreciated by Southern born planters and their former slaves. The cultivation of cotton by immigrants, either for themselves or as "helps," would result in failure.

I may be asked, do we not need immigrants? Most surely we do; but not such a stream, nor generally such a class as pours annually into the Northwest. We need those foreigners, who not only know how to work, but who will bring with them the profits of their past labors or something to invest in real estate on their arrival in this country. There are no government lands here to be squatted upon, and our people in their poverty cannot see ultimate wealth in giving away half the little they own. From such a policy no good would result.

But there are many obstacles in the way of introducing that class of foreigners, who would by their purchases and actual settlement, become identified with the South, and become employers of the labor already here in abundance, could it be utilized. We have too many canting farmers as well as thieving politicians in our midst. While many are deluded by a long deferred hope of better times, they cry out at every turn poverty, poverty, and never once throttle this intruder and try to drive him from their doors by going energetically to work. Too many, again, have exchanged the profession of agriculture for the bar, (?) the counter and the idler's stool. "We are poor," is a sort of siren song whistled and sung by both old and young throughout the land, and yet every one asserts there is more money in cotton than any plant that grows; and all plant cotton. Singular condition of things! as much money can be made from an acre of cotton in the South, as from any other plant grown any where in the world. I knew three bales made on an acre in 1872. But cotton planters are all poor; why so? The fact of the matter is, we are so ignorant, that we cannot appreciate anything but our poverty. One half the world doesn't know how the other half lives. We scarcely know how we live

ourselves. Nature has done so much for us, we care to do but little for ourselves. We are concerned about nothing but the next cotton crop, and our extravagance induces us to spend the half of that before it is made. We seldom practice economy, and so infatuated are we with the cotton prospect, that every man is a cotton planter, and each thinks himself the best in the land. With one breath we decry our country, with the next we extol it to heaven. Many, too many of us, hanker after the flesh-pots of *ante bellum* times, without properly buffeting the hardships of the present. We blame others, when we ourselves are to blame. We placard in every newspaper the corruption of our rulers, and grumble in thunder tones that echo across the Atlantic—our country is ruined. What inducement is all this to capitalists, or worthy immigrants, to come and settle amongst us? Says one, I will give the half of my land to actual settlers. Another is willing to sell at a very low figure; while a third is willing to lease for any number of years. All such assertions are simply the evidences of spasmodic generosity, and will never benefit the utterer, nor the country a dime. If we desire immigration, we must act, and not only speak. We must beautify and ornament our homes; make them attractive to ourselves and our children, and they will become attractive to others. We must study contentment, and create the impression abroad, that this is not only a fertile and productive country, but a happy one. This much effected, we will no longer need the aid of Immigration Societies, who at best are of doubtful benefit, for they introduce isolated families of helpless and often worthless creatures, that come as if to a place of punishment, when they land amongst us. But our attractions will speak for themselves, and buyers will, at no distant day, be on hand for every acre of land thrown upon the market.

D. WYATT AIKEN.

Cotton in Checks or Squares.

In compliance with your request, Mr. Editor, I now proceed to give you the result of last year's experiment with a field of cotton, planted in checks or squares, also the culture and my impressions as to the merits of this system, and the best method of procuring a stand.

I will premise by saying that this field, 28 acres, was taken in hand in 1871; previously it had been much exhausted, so much so that four hundred pounds of seed cotton would have been a full turn out per acre. It was as badly infested with joint grass as land could possibly be. The cultivation in 1871 reduced to some extent this pest, though there was still a thick set of this noxious grass—noxious in being very unfavorable to cultivation.

Early in April, a compost of acid phosphate (Messrs. G. W. Williams & Co.'s) and cotton seed—280 lbs. of the former and about thirty bushels of the latter—was broadcasted and turned under with two-horse ploughs, the land being broken about six inches deep. It was then harrowed off with revolving harrow, following in a few days and burning the grass roots which had been collected on the surface by the harrow. About the middle of April the rows were run off, three and a half

feet wide, with a four inch shovel. Immediately thereafter it was crossed with a marker, which run three rows at a time, three feet wide. The seed, Dickson's select, were dropped by hand and covered with the foot—a slow and tedious operation. In the furrows, run by the four-inch shovel, 167 lbs. of Carolina Fertilizer was distributed, and then covered by light iron tooth harrows. The cotton did not get up, by reason of drought succeeding, until the 20th of May, and then a bad stand. It was twice gone over and the missing hills replanted, but with slight improvement; fully one-seventh of the hills were missing. The first two ploughings, the wide way, were with Thill ploughs, having two small sweeps attached. The subsequent ploughings were with 22-inch sweeps, every alternate ploughing being one furrow the narrow way. The cotton was hoed three times, the first time reducing to a stand, leaving from one to two stalks to the hill. The first and second hoeings, the hands did about two acres per day; the third hoeing, they did about three acres. If in ploughing across, the last time, two furrows had been run, so as to have thrown the dirt well up to the cotton, the third hoeing could very well have been dispensed with. The yield was 1,093 lbs. per acre, and the last picking hung in the field a month after it was open before I could get it gathered.

By the side of this field was another of 24 acres, of like character, similarly fertilized, only the fertilizers and cotton seed were put in the bottom of the bed. The cotton was cultivated in drill and got five hoeings, and one ploughing less than that in the checked cotton. The yield in this field was 895 lbs. of seed cotton per acre, giving the checked cotton an excess of 198 lbs.

If one experiment justifies an inference, that inference is in favor of hill culture, at least in this locality. Our climate is moist, about thirty miles from the sea-coast, hence our cotton should have distance to give free access of air and sunlight, in order to its more perfect development, and to prevent rotting, when in an advanced state, should the weather be wet. Further, not only from this experiment, but from a previous one in 1870, my observation is that cotton, in hills, retains its vitality longer—an important gain with us when cotton, in the drill, begins seriously to fail by the middle of September. Another advantage is, that you can dispense with nearly one half the hoe work. The main difficulty in the way of check planting, is the loss when the stand is bad. This may be met by getting a thick stand in the drill and crossing afterward. The implement I design trying the present season for that purpose, I will endeavor to describe, so that should any one else desire to adopt hill cultivation, it may be available.

For crossing at the width of three and a half feet, marking four rows at a time, take a plank eleven feet long, nine inches wide and one and a half inches thick; from the centre mark off twenty-one inches on each side, from the twenty-one inch marks measure off three and a half feet toward each end of the plank. One and a half inches on each side of these marks, cut a groove one inch wide and three-quarters of an inch deep; into these grooves let in, tightly, pieces nine inches long, one inch thick, and five inches wide. These pieces should stand perpendicular to the plank, and must be held securely by a bolt or pin, and will be three inches apart, *i. e.* the two contiguous. Chamfer the bottom and fronts of these pieces at the same time, sloping the bottom towards the front, so as to permit smooth gliding

over the surface. Turn your plank over, attach shafts and handles, so that the horse will be directly in front of the centre of the plank. Before planting the cotton, the beds should be levelled with a light harrow. First, run round the cotton in the drill with sleeps, then cross with the marker, using stakes fourteen feet long to warrant accuracy. The cotton will be left in bunches of three inches, with intervals of thirty-nine inches between. Plough out the thirty-nine inch intervals with sweeps, and the cotton will be left three and a half feet apart on the bed, and and more accurately in line than it can possibly be had when planted by hand. It will be observed that the horse and ploughman will walk over the cotton in one of the intervals to be ploughed out, and do not in any way injure the cotton that is to remain.

When a good stand is secured in the drill, it will give a good stand in hills; when the stand was thin in the drill, a bad stand would be the result in squares. Hence the use of this marker is only recommended when a thick stand is secured in the drill; neither would it answer well, except on smooth, well prepared land.

JAS. McCUTCHEN.

Indiantown, S. C., January, 1873.

The Effects of Manures.

The reason for the application of manures to any soil, is the effect produced. This is the improvement of the soil. Manures in their operations, act both chemically and mechanically upon the soil, so that, while in one way they are effecting chemical combinations which are to result in great advantage to the growth of the young plant, in another way, they are breaking up and pulverizing the harder portions, so as to become more easily available to plant growth.

Therefore, while some substances may be said to possess only a limited amount of nutritive matter for plants, their action upon the soil to which they are applied, is such as to make them the best thing that could be applied. The same rule, also, applies to the different soils themselves; thus while a sandy plain may be of little account for purposes of cultivation without some amendment, if clay from some adjacent clay bed be spread upon the same, and incorporated with the sand, it becomes a highly fertile soil; so too, if the reverse be practiced, the sand be carried upon the clay soil, the mechanical condition of the same becomes at once changed, which is a great improvement upon the original. Again, by these unions of the different character of soil, different combinations of elements have been formed, and hence an increased power to produce crops. In fact, both processes were essential; for in the first place, it was necessary to so change the sandy soil as to increase its power of retaining whatever of manure was applied, and this was accomplished by the application of the clay; so too, the great tenacity of the clay soil must be reduced, so as to become susceptable of being worked, and this was done by the sand. And, in the second place, as a general rule, the more perfect the union of different characters of soils the more active the chemical effects, and hence the more useful to the plant.

But while these facts exist, so far as the union of soils is concerned, so too, similar effects exist, or are produced in the application of fertilizers; therefore, it is very necessary that these effects should be studied by the farmer, who in his blind haste to accumulate riches, he may not commit any errors which will tend to impede his efforts rather than advance them. Manures may very properly be classed either as amimal, which consists of the excrements of animals; vegetable, which consists of green crop manures and vegetable substances unconsumed by animals; and mineral, or that which is almost wholly inorganic. Of these, the animal and vegetable, in their action upon the soil, are both chemical and mechanical, while the mineral manure is wholly chemical, that is, different chemical combinations are formed, but aside from that no change in the soil is effected; while on the other hand, the animal and vegetable must pass through a state of decomposition which greatly effects the mechanical texture of the soil. This is one of the great advantages of the use of green crops, especially of clover, by the decomposition of the roots of this plant, which under favorable circumstances extend to no inconsiderable depth, the soil becomes porous, and as were aerated, and so warmed and reduced, and much better adapted to the wants of the plant. On the other hand, an exclusive use of mineral fertilizers would tend to compact a soil, and where this occurs, although reasonably fertile, the productions will be gradually diminished. Therefore, no farmer should ignore the use of farm manures or depreciate their value, but should husband all that time and circumstances will admit, so that mineral manures may be used with them to the advantage of both.

Columbia, Conn., Feb. 1, 1873. WILLIAM H. YEOMANS.

Labor, Capital and Agricultural Banks.

It has been a matter of surprise to me that all the suggestions that have been made for the relief of planters, that not one, as yet, has been found practicable. Prominent among the suggestions, is that of the immigration scheme, and under the present aspect of affairs, nothing is less likely than it, to effect that object.

It must be patent now, to all thinking minds at least, that labor and capital, seldom if ever, emigrate together from one distant country to another, and without capital as well as without labor, all efforts in that direction must prove futile. The planter needs capital to utilize the labor in our midst and to render that which he has invested in lands available. Formerly he had labor and capital combined in his slave, the loss of whom has materially deteriorated the value of his landed possessions. He in turn has become the slave—but of capital. This is the actual condition of the planter to-day—a slavery as hopeless as it is intollerable. Our lands, in the main, are still in large tracts with but few settlements; can it be expected that immigrants will be induced to come from abroad while we have so little to invite them in the matter of accommodation. The vital question is *labor*, but we must have money to utilize and control it, so if immigrants can be induced to come here under the present prospects of gain, or of turning labor into

capital, such as at present our country invites, why may not the hardy yeomanry of our own country be induced to do the same thing? It is clearly not within the means of the planter to make the inducement strong enough either for the one or the other. It is obvious then, that money is the *sine qua non* in the practicable development of this immigration scheme—without the aid of money, it is a vision, a dream of the past. The idea of any advantages to be derived from this scheme, to the minds of the practical planter, is more in imagination than in reality.

Every one knows, particularly in the long cotton region in South Carolina, the utter folly of planting under the old system; the unreliability and utter worthlessness of labor such as we are forced to employ; and how each recurring year more fully proves this characteristic of our labor. It is a well known fact, that what money the planter has is borrowed from his factors at such high rate of interest, and such conditions exacted, that makes them burdensome and oppressive, and if persevered in will end, as in many instances it has already ended, in his total failure and bankruptcy. Does the long cotton pay at present prices? I speak by authority when I say that it cannot be made to pay under the old system of planting and for want of means the planter is not prepared to adopt any other. The condition of this class of planters is hopeless, and yearly they are abandoning a contest, as they regard it, with a fate that is inevitable. The planter then needs money to build up small farms and to reclaim much of his land, which for want of cultivation, is fast relapsing into primitive wildness.

Many watched with some degree of interest the Grange Societies, which it is said propose to work in the agricultural interest exclusively, to see if anything would be suggested for their relief. If this then is really the object of these societies, and it be an admitted fact that no great separate interest or enterprise can be promoted and projected without the aid of money, then why do they not establish a bank of their own? Cannot our lands form the basis of capital to start one or two banks in the State under the auspices of the Grange, exclusively in the interest of agriculture? It would work out a problem, in my opinion, that has been hitherto regarded as not a solvable one.

We have heard it suggested, that money necessary for a start, must be dug out of the ground; really, this suggestion seems good, but it would scarcely be wise for us to accept it, when it is known that those persons who have the most land, have the least capacity for manual labor. Land is all they have to represent money or capital; they have not the means to cut their large tracts into small farms, and build comfortable cottages upon them. The men to whom he might perchance sell, or even give, in alternate sections, have not the means to improve, so they are obliged to forego the opportunity of "digging it out of the ground." Will not some one, acquainted more particularly with objects of the Grange, canvass the idea of a banking institution in the agricultural interest among the different Granges of the State, and see what of practicability there is in it.

SIGMA.

Underdraining for Profit and Health—IV.

FILLING DRAIN DITCHES.

Tiles are the best appliances yet invented for conveying water in drains, and where they can be made on or near the place at which they are to be used nothing is more economical; but, tiles, cannot always be had, and there are various other contrivances for providing a water-course in the bottom of the ditch, to be afterward covered with earth in the same way as the tile drain.

Where stones abound they can be used with advantage, if laid with care, so that the earth will not penetrate and fill up the interstices. Figs. 1 and 2 illustrate two

Fig. 1.

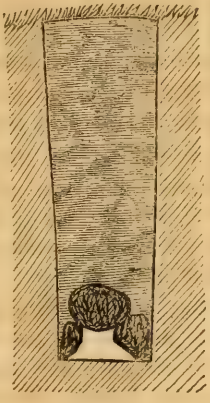

Fig. 2.

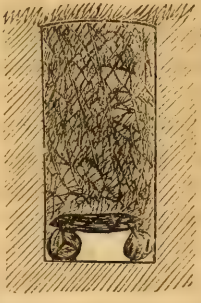

Fig. 3.

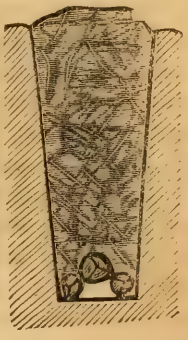

Fig. 4.

different kinds of stone drains. A careful and intelligent laborer is required for placing the stones, and the openings betweeen the larger ones must be closed by means of smaller ones. Where flat stones are used, the operator must have a hammer with which to trim the edges and break those which are two large to a suitable size. Fig. 3 shows a combination of poles and stones. This drain is described in the "Report of the Department of Agriculture for 1870," as follows:

"In the year 1843 a large open ditch was filled by laying round poles on each side and covering them with flat stones. Flat stones were scarce, and could not be obtained within a distance of three miles. The poles were chiefly white and red beech, laid in the ditch the same day they were cut, and were usually about four to five inches in diameter. The bottom of the ditch was about fourteen inches wide. All the joints between the stones were covered with thin, small pieces of flat stones. That drain has never, up to the present time, failed to deliver a large stream of water, and to drain the soil thoroughly on each side of it. It was not expected that those green poles would last ten years. If such perishable timber as white beech will last in a ditch twenty-seven years, surely cedar and other *durable* timber will endure a life-time. Poles will last much longer if the timber be thoroughly seasoned before being laid in the ground. If small boulders, or even hard-burned bricks, could be substituted for poles, they would be far preferable to wood."

Rails and poles are often used for filling ditches as shown in Fig. 4, but unless the poles are very straight and uniform in size, the results are not satisfactory, the difficulty being to make them fit sufficiently close. Where this difficulty does not exist, they make a very good drain, which will last a long time. Having the covering poles or rails cut into short pieces partially obviates the difficulty of fitting them. A still better plan, where a horse power and a circular saw can be commanded, is to cut the covering pieces about ten inches long and lay them crosswise on the bottom poles.

PLANK DRAIN—MR. TODD'S PLAN.

Mr. S. E. Todd says: I once made a drain in this way: The ditches were cut ten

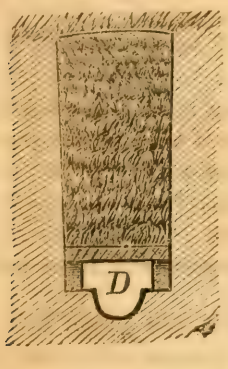

Fig. 5.

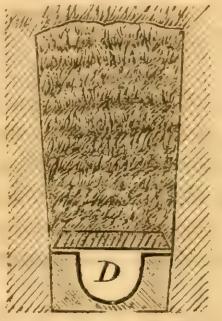

Fig. 6.

Fig. 7.

inches wide at the bottom, and the corners were dressed out true and square, so that a piece of scantling would fit closely without falling over toward the middle. After the bottom was well graded, a channel, as represented in Fig. 5, was cut in the bottom about five inches deep by four wide. After the channel was formed, pieces of scantling two inches square, or two by three inches, were laid in the corners of the ditch, and pieces of plank ten inches long were laid on the side-pieces. In some instances side-pieces two by four inches were employed. The object of the channel in the middle of the ditch is to keep the stream of water midway between the side-pieces, and thus prevent the stream from undermining the sides; also to increase the capacity of the drain. The side-pieces will sustain the planks and keep the channel open, even if the water were to wash away the earth; but by directing the water, at the outset, in a channel, the banks will soon be smoothed over, so that the earth will not wash away, except in sandy soils. Many hundred rods were made by simply laying the pieces of plank directly on the banks of the channel in the bottom of the ditch, as represented by Fig. 6. Yet, planks were never laid on the banks of the channel where the ground was so soft that it could be readily spaded. For drains of ordinary size, the bottoms of ditches were dressed only eight inches wide and the channel was excavated about five inches deep. By this arrangement an excellent ditch was made at the cheapest possible rate. One great advantage in the use of planks laid cross-wise, in filling ditches, is the effectual exclusion of mice.

Fig. 7 represents a method of using tiles and stones together. It has been applied where a large amount of water is to be conveyed. Flat stones must be used and they must be laid with great care.

Guano on Gray Lands and Rust in Cotton.

I see in the RURAL CAROLINIAN, for November, 1872, an article from Dr. Pendleton, which contains several mistakes. I would not notice them if they were not injurious to the planting interest. I am Dr. Pendleton's friend, and he is mine.

I do not concur with him in regard to guano not succeeding on gray lands. Gray land is good for cotton, and suitable for guano if it has a clay foundation. Land that is sure to make a full crop according to capacity, is sure to do well with manures of any kind containing plant-food.

I disagree with the Doctor about ammonia being stimulating. It acts at once, because it is the most essential crop feeder, and is most soluble. There is no such thing as stimulating plants. Feed them, and they will be sure to grow if treated right.

Dr. Pendleton is mistaken about my ever consulting a chemist in regard to my compound, or salt and plaster, or anything else; though I know and appreciate the value of chemistry, and the sciences generally, to the world. They are accomplishing wonders. Salt and plaster, from the first to the present, have been a complete success with me. He is also mistaken about muriate of potash being a failure. That also is a success, as all my tenants will bear witness, as well as all others who have seen my crops growing.

It is remarkable how two men, G. Ville, in France, and myself here, should agree so nearly about a complete manure, each being ignorant of the others experiments. I have always classed the essentials of plant-food in this order: Ammonia phosphoric acid, potash and lime, just as Professor Ville has done. I admit all must be present; and these, if in sufficient quantities, will find the balance in almost any soil. But, besides these four, it is all-important to have sulphur (as in land plaster) and salt to keep the cotton plant healthy and growing.

I have always contended that rust is caused by nothing but poverty of soil, and my practice has fully proved it. The first badly rusted cotton I ever saw, was about fifty-five or fifty-seven years ago. Now I am cultivating the same plat with complete success, making from 2,000 to 3,000 lbs. seed cotton per acre.

The rust question is of the first importance to the cotton planters, and I say it is caused by poverty of soil, in various ways, but still it is poverty. Causes: 1st. Leaching of land by it being springy and by being porous, and heavy rains sinking all soluble matter below the roots of the cotton plant. 2. General exhaustion of all the plant-food. 3. Letting it get grassy too early, or stopping work too soon.

Our Star Compound, made in Augusta, is a complete remedy on all dry land, that which is springy must be drained. The rust weed will point out every acre of land that will rust. Rust in cotton is completely under the planters control.

In the crop of one of my tenants, in 1871, there was a wet part in one of his patches that got very grassy. He ploughed one-half over with a sweep, and it took on bolls finely, but got over-taxed and became rusted, but still made a fair crop. On the other half he took a turning plough and went in deep, throwing the dirt all in the middle, and causing the cotton to throw off what bolls it had then made,

and it failed to set any for a good while. After the plant recovered it grew finely and commenced to take on bolls, and did not rust but made nothing, frost killing all. That ploughing was the last, except a middle sweep furrow.

A heavy load of bolls early, will make cotton rust on thin sandy land from exhaustion, if not well sustained with a good fertilizing compound.

Last year, on the top of a sand hill, one of my tenants left out about twenty rows without manure. He stopped ploughing about the twentieth of July. The manured rows shaded the ground, kept down the crow-foot grass and did well, making 1,000 to 1,200 seed cotton per acre. The rows unmanured were overrun with the grass rusted, and did not make at the rate of 100 lbs. per acre.

Two years ago, one of my tenants had a cow-pen in the middle of one of my fields, in which cotton rusted badly when not properly manured. The next year planted it in cotton. That where the cow-pen was did not rust, and made a fine crop.

The great remedies for rust are the spade, clay scattered over, rotation of crops, rest, and heavy manuring. These remedies are sure.

We could soon be all independent if we would quit begging for immigrants and capital, and take matters in our own hands.

We want nothing but machinery and guanos to make us independent, and we should use manure wisely, or it may work an injury. If the whole of our manure is put on cotton we shall make too much. If we make all we need at home, one half the labor in cotton will make more money than all. Make up your minds that we can accomplish anything we need without any more men or foreign dollars. Take hold, and we shall soon be prosperous. Then we shall own our own country and our money.

Hold to your land with a death grip, for your children and for the native landless. Let charity begin at home. You will never make money out of immigration.

Sparta, Ga. DAVID DICKSON.

[We gladly welcome Mr. Dickson again to our pages. The opinions of a veteran planter, like him, and one who has demonstrated the value of his system by its success, are entitled to the greatest respect, and while we cannot wholly agree with all the doctrines of the foregoing article, we just as warmly thank him, in behalf of our readers as well as for ourselves, for giving us the opportunity to print it.—ED.]

The Indian River Country and its Mosquitoes.

"If you want settlers on Indian River, you must make the truth about *mosquitoes* prominent. If there are none there, then, the names Mosquito River and Bar are unfortunate ones."

Thus writes a gentleman in Jasper County, Tenn., and his remark is pertinent and deserves attention.

Mosquitoes are indigenous along the whole Atlantic coast from Maine southward, I believe, and Florida has probably her proportionate share of them; but when the length of her coast, and her numerous inland lakes, rivers, creeks and swamps are considered, together with her mild winters and superabundant summer rains, the wonder is that they are not more numerous and troublesome; and that in many localities the inhabitants enjoy almost entire exemption from them throughout the year.

It is believed that the species of mosquito infesting the Indian River country is propagated in the decaying grass, and the humus which the absence of fires for years has allowed to accumulate; and this opinion seems to be confirmed by the fact, that just in proportion as the burning of the woods takes place, the insects are found to decrease in numbers.

The Indian River mosquitoes are smaller, and more frail and clumsy than those found in Georgia. The gallinippers and blind mosquitoes of the St. John's River, are never seen here.

The mosquito season commences about the 1st of June, with the showers, and frequently lasts but a few weeks, when the insects disappear as suddenly as they came. They are to be found in the humid atmosphere of densely shaded swamps, and never, in the day time, to transcend their shady limits. Along the entire length of Indian River, the parallel coast is mainly a deep one. Large wrecks are thrown ashore, and their damaged cargoes strew the land. The beach is narrow, and the bluffs high and abrupt, with no swamps or marshes, except towards the southern extremity. The prevailing southeast winds are constantly and gently sweeping the banks of the river, driving the mosquito into the country beyond. They cannot stand light, wind or smoke, and are easily excluded by a bar.

The many fabulous stories which have been told of the insects of the Indian River country, are mainly the result of the wonderful growth which such "hearsay" tales are wont to make in the fertile minds of imaginative narrators, as they pass from lip to lip. I was so dismayed by these exaggerations as I first passed up the St. John's River, on my way to Indian River, that had I not been ashamed to turn back, I should probably have never seen what I consider the most beautiful, fertile and healthy country, of which I have any knowledge. I remained there during the winter of 1868, and the summer following, clearing and planting in a hammock. Some orange trees which I then planted have ripe fruit on them now. I have revisited the country since and am now about to make it my home, satisfied that the insects will not seriously interfere with the comfort of myself or family.

The country is fast showing the effects of energy and capital, and it is being demonstrated that not only the wild beast, the Indian and the pioneer can stand the insects, but that delicate women and children are happy and contented in their new homes, and hopeful in prospect of the golden harvest of the future.

W. H. SHARPE.

Hartsville Farmers' Club Experiments.

Having been appointed by the Hartsville Farmers' Club, to test by experiment, the value of Composting Dissolved Bone, (Etiwan,) and Acid Phosphate, (Pacific, Co.) with Cotton Seed of equal weight, the same quantities applied without being composted, and also the real active value of Soluble Pacific and Peruvian Guanos, in different quantities, to ascertain what number pounds would yield the greatest net profit. I herewith send you the result, as it may be of some benefit to my brother farmers.

These tests were made with much care, and may be relied on, as being as nearly accurate as it has been possible to make them. The different fertilizers were weighed by Fairbanks' Counter Scales, for each row separately, three rows an acre

long were selected for the experiments, and the middle row of the three, was picked each time in dry weather, and weighed by the same scales, noting ounces as well as pounds, and in the end, adding all up and calculating it by the acre. This mode was adopted, in order that each row taken should have drawn from its own fertilizers alone, and had a larger quantity of land been used, it would have varied more in quality, and could not have been picked under like circumstances. The land selected is high, level, old and poor. These manures being usually used for cotton; I also append an experiment on corn. The test of well directed experiments, are often more reliable than the chemists' certificate in regard to manures in the market.

T. C. LAW.

Hartsville, S. C., December, 1872.

EXPERIMENT ON COTTON.	Seed Cotton made per acre.	Cost of Fertilizer at Darlington Depot.	Cotton Seed at 20 cents per Bushel.	Total cost of Manure.	Value Seed Cotton made, 5 cents per pound.	Value of Seed Cotton, exclusive of manure.	Gain.	Loss.
1. Without Manure	325				16 25			
2. 200 lbs. to Acid Phosphate (Pacific) 200 lbs. Green Cotton Seed	486	3 00	1 60	4 60	24 30	19 70	3 45	.....
3. 200 lbs. Acid Phosphate, (Pacific,) 200 lbs. Cotton Seed Composted	535	3 00	1 60	4 60	26 75	22 15	5 40	.....
4. 300 lbs. Acid Phosphate, (Pacific,) 300 lbs. Cotton Seed Composted	528	4 00	2 40	6 40	26 40	20 00	3 75	.....
5. 400 lbs. Acid Phosphate, (Pacific,) 400 lbs. Cotton Seed Composted	549	6 00	3 20	9 20	27 45	18 20	2 00	.....
6. 200 lbs. Dissolved Bone, (Etiwan,) 200 lbs. Green Cotton Seed	535	4 00	1 60	5 60	26 75	21 15	4 90	.....
7. 200 lbs. Dissolved Bone, (Etiwan,) 200 lbs. Cotton Seed Composted	514	4 00	1 60	5 60	25 70	20 10	3 85	.....
8. 300 lbs. Dissolved Bone, (Etiwan,) 200 lbs. Cotton Seed Composted	619	6 00	2 40	8 40	30 95	22 55	6 30	.....
9. 400 lbs. Dissolved Bone, (Etiwan,) 200 lbs. Cotton Seed Composted	619	8 00	3 20	11 20	30 95	19 75	3 50	.....
10. 200 lbs. Soluble Pacific Guano, 200 lbs. Green Cotton Seed	532	5 00	1 60	6 60	26 60	20 00	3 75	.....
11. 200 lbs. Soluble Pacific Guano alone	392	5 00	.....	.....	19 60	14 60	.....	1 65
12. 400 lbs. Soluble Pacific Guano alone	500	10 00	.....	.....	25 00	15 00	.....	1 25
13. 800 lbs. Soluble Pacific Guano alone	780	20 00	.....	.....	39 00	19 00	2 75	.....
14. 200 lbs. Peru. Guano, (Chincha,) alone	724	8 70	.....	.....	36 20	27 50	11 25	.....
15. 400 lbs. Peru. Guano, (Chincha,) alone	798	17 40	.....	.....	39 90	22 50	5 75	.....
16. 800 lbs. Peru. Guano, (Chincha,) alone	938	34 80	.....	.....	46 90	12 10	.....	4 15
EXPERIMENT ON CORN.								
200 lbs. Dissolved Bone, 200 lbs. Cotton Seed Composted per acre	12¾ Bus.	.....	.....	5 60	.....	7 15	.....	.....
200 lbs. Dissolved Bone, 200 lbs. Cotton Seed, Green	12⅜ "	.....	.....	5 60	.....	6 88	.....	.....
200 lbs. Acid Phosphate, 200 lbs. Cotton Seed, Green	16½ "	.....	.....	4 60	.....	11 90	.....	.....
200 lbs. Acid Phosphate, 200 lbs. Cotton Seed, Composted	13½ "	.....	.....	4 60	.....	8 90	.....	.....
200 lbs. Soluble Pacific Guano, alone	10½ "	.....	.....	5 00	.....	5 50	.....	.....

Horticulture and Rural Adornment.

Horticultural Hints for March.

Our hints for February may be consulted with advantage by all who require such hints at all, at the beginning of the present month. Much of the work there set down has, no doubt, been postponed on account of the backwardness of the season, especially in more northern latitudes than that in which we write. This deferred work should now be attended to at once. If seeds have failed, replant them. Hoe and keep free from weeds all growing crops. Whether weeds should be troublesome or not, stir the ground frequently. No manure pays so well as the pronged hoe. It lets the air with its moisture and its fertilizing gases into the soil, and to the roots of the plants. Cabbages are particularly grateful for frequent cultivation. Mr. White, author of "Gardening for the South," was accustomed to hoe his plants while the dew was on, and to contend that they were more benefited by hoeing at that time than at any other, and he was right, though we can not go into a philosophical disquisition here to show why.

———Tomatoes, Peppers, Guinea-Squash, and other tender plants may, if the weather be favorable, be transferred from your hot-beds and cold frames to the open ground, in this latitude, from the middle to the last of this month; but if the cold, raw winds continue, wait till the first of April. Seeds of all these may be sown in open grounds, from the middle to the last of this month. About the same time, sow Celery in a cool, moist, shady spot, but not under trees. The north or east side of a tight fence is a good place. Sugar Corn, for the first crop, should be planted early in the month, but the main planting may be deferred. Common Corn planted at the same time will come in later, and bear the heat and drought better. Have your ground ready for Snap Beans, but do not plant till settled warm weather can be relied on, unless you are prepared to cover them, on occasion, to protect against frost.

———Where not already planted, or where the first planting has failed, put in Carrots, Beets, Parsnips, Swiss Chard. Thin out those planted last month, if you were fortunate enough to get a stand. Okra, Cucumbers, Squashes and Melons, may be planted towards the last of this month. A few hills, planted earlier, can easily be protected as hitherto advised. Try Persian, Casaba and White Japan Melons, if you can get the seed. Plant Mango (Vegetable Pear or Chocho—*Sechium edule*) as soon as possible after settled warm weather comes on, and if frost should threaten, carefully protect the tender shoots. We have frequently recommended the cultivation of this excellent vegetable, especially in the lower South.

———In the upper country, Cabbage plants may be set out this month, with advantage, for summer use. Here, they are generally destroyed by worms, but we sometimes succeed with the Green Glazed, or with a dwarfish, quick growing

variety, like Little Pixie. Use guano or some other commercial fertilizer, and liquid manure to stimulate growth. Try the hot water-cure (see January number, p. 200,) on the worms, but *cautiously*, lest you "cure" the cabbages also. Sweet Potatoes should be bedded early in the month, if not already done, to furnish a supply of "draws" for planting about the first of April.

———This should be a busy month in the Flower Garden. Seeds of most annual flowers not planted in February, should be sown this month. The main requisites for success are to have the soil in a friable condition, so as not to bake, and to sow the seeds the right depth. Very small seeds should be sown on the top, and merely pressed in; large ones deeper, in proportion to their size. A good way to cover flower seeds is to sift earth over them through an old sieve.

———Evergreen Shrubs and Climbers may still be planted, watering them moderately at the time, and afterwards as they may require. Get Shrubs from the woodlands, such as the Azaleas, Scarlet Honeysuckle, Fringe Tree, (*Chionanthus*,) and the Laurels, taking them up with great care and shading them after planting.

On Tomato Culture.

Having been quite successful in my crop of this indispensable vegetable, during the latter part of the past summer, has caused me to review my varied experiences during the last four or five years, during which I have grown them solely by my own labor, and I flatter myself that if I have not entirely succeeded in solving the problem of how to have a continuous supply during the whole of our summers, I have at least made one step towards its solution. I have found that when the plants are set in medium or poor soil, they will not bear much fruit at any time, nor even in the aggregate, but they will live and bear throughout the whole summer. If the plants are set in fresh land of good quality, or in land manured for some previous crop, they will bear more fruit, and also last until the frost kills them, but if they are set in highly manured land, they bear abundantly, but soon die *from exhaustion*, in my opinion.

If these statements are correct, then my idea is that in order to have a good supply of this vegetable during the whole summer, and also a good part of the winter, I would set the plants in highly manured land and make repeated plantations from seeds sown during May, June, and sometimes even in July. My theory about Tomato plants is, that they can bear only so many fruits and as soon as they do this, they die from *exhaustion*. I never train my plants but always allow them to be on the ground and take roots at the joints like pumpkins and other vines. I believe that salt is a good manure for the plants to a certain extent. If plants from this last sowing should not have season enough to ripen much fruit, they will at least produce a good quantity of fruit sufficiently grown, if gathered before the frost can injure them, and put away in some room, where if they do not freeze they will continue to ripen until towards spring, exactly how late I cannot yet say. When the first black frost came on the night of the 16th of last November,

although apparently pretty severe, yet it singed my plants which were in vigorous growth and loaded with full grown fruit. The frost of the next night (17th,) was still more severe, and yet it appeared to injure such fruits as were exposed, while all that were covered by the vines were apparently untouched. On the 19th, I gathered all of the fruits that did not show any injury from the frost, amounting to between one and a half and two barrels, and put them in the attic of my house, which, unfortunately, is too open to the effects of cold ; consequently the cold of the 30th, which froze water in every room in my house, froze also a good part, say *about one-half* of my tomatoes. I confess that I was quite surprised to find so many unhurt and, some nearly ripe, which I have just examined, have not been hurt by the very severe cold of the 18th instant, (January,) which froze the water, milk and cream in the same room, and none of which thawed during the 19th. I had a good tomato sauce made from some of the fruit freshly ripened, and I hope to have it several times more unless we have still more severe cold. I confess my surprise at their ability to resist such severe cold. If I had had a warmer place in which to keep them and protect them from severe cold, I believe that I would have a fair supply for weeks to come. Another singular fact is, that having one young plant full of fruit and (the plant) only slightly singed by the frost, I housed it with all its fruit on it, and while only a part of the gathered fruit along side escaped, every fruit on this plant rotted very soon. I am thus minute on stating these little facts because I could hardly have believed them if I had not seen them.

Another circumstance has also surprised me which is the hardiness of the young plants. Last July or early in August, I sowed some seeds of the Dixie, in a herring box, filled with earth, but they came up so late that I thought there would not be summer enough left for them to bear fruit, if set out and therefore concluded to keep them in the box undisturbed, and by frost several of the plants were blossoming, and one had a half grown fruit on it. This box of plants was *generally* taken in when the night threatened black-frost, but several times it was left out on the shelf in the piazza, when there was ice. It was, however, in my parlor during the intensely cold night of the 18th instant, (January,) when the cream, &c., froze in this room, and this cold has killed all the plants certainly down to the earth in the box, but I have a faint hope, not lower. Another singular circumstance is that one or two days before this cold I noticed six small tomato plants just come (one or two had not cast off the seed) in this box and they, to-day, (22d January) appear quite fresh and unhurt. The same cold that killed my tomato plants killed all of the geraniums which my daughter kept in another equally cold room, therefore, I believe that young tomato plants can be kept through the winter wherever geranium plants will live.

Although every room in my house is equally cold, and during three nights of this winter has water frozen in every one, yet as we do not often have such severe cold I intend every winter to try to keep some young plants.

It is my belief, from a very limited experience, however, that the northern varieties, such as the Alger and Trophy, bear much more abundantly, and the fruit attains greater perfection when the plants are set out late, so as to come into full bearing only a short time before frost, while for fruit during the earlier part of the

summer, plants from our old seeds stand the heat and bear better. Why cannot tomatoes gathered just before frost and packed on sand, &c., keep as well as other fruits? The Trophy and Alger would probably, the most suitable for this purpose, because they are firm-fleshed, and why could they not be dried by the Alden process. It is very true that they would dry up very much, but in return, a little so dried, would go a long way. R. CHISOLM.

American Pomological Society.

F. R. Elliott, Esq., Secretary of the American Pomological Society, writes to us as follows:

Friend Jacques: It may not be inappropriate for me to say to you that I have recently been passing days with our honored friends, Marshall P. Wilder, P. Barry, C. Downing, and others, in discussion, as to what we can do in aid of and progress toward, our American Pomological Society, and the great interest it embodies.

We have looked over the whole subject, and while some have written me premising that the great fire of Boston will prevent her interests and energies from presenting a full and true exhibit, I am happy to say to you, and all friends of fruit culture, that Boston and her suburbs yet hold men of pluck, capabilities and means to meet all, and more, of aid, and supply the way of preparation, etc., for the coming quarterly centennial meeting that may be thought of or conceived. We must work for a good that provokes, as it encourages the energies of our people toward progress, and let me say to you that so far as I now learn, the next meeting of our American Pomological Society, will exhibit more of manhood intelligence in fruit culture, and varieties of fruits, than has ever before been known at any public gathering of a like kind in the world. I will not now write you of all the items outside of the great attractions our fruit gathering of men and their products will show, for they of themselves ought to be sufficient to bring every fruit grower from the South forward, with his products to compete; but afterward, if you wish me, I will write you a word or two of the many good and beautiful items of value and interest that will, in a sense, make every fruit grower of the United States deeply regret that he was not there to join and see.

Boston, as you know, has her abundance of beauty in landscape, her extravagance of wealth in artistic taste, and in nature's own productions brought from tropical climes. The fig, orange, etc., of your South is by her wealthy votaries brought prominently before the public, and her men are ever ready to ask of the South information, while showing the work of their own knowledge. Let me hope you will urge all of our Southern friends to meet us cordially at our next September meeting, and if you would like from me a hint or so, of Hon. Marshall P. Wilder's beautiful pear orchard, old camellias, etc.; Wm. Gray's Jr's. collections of 800 and over of geraniums, pampas grass 12 feet high, etc.; of E. S. Rand's Jr's. collection of rhododendrons; H. Hunnewell's elegant lawns, Italian and French gardens; C. M. Hovey's productive orchards and rare greenhouse plants; W. C. Strong's side-hill houses, for propagation, then all you have to do is to write me, aye, and I will respond, in aid of inducing our worthy coadjutors in fruit and flower culture to make Boston a point to visit, September 9 to 13.

F. R. ELLIOTT.

Cleveland, O.

The Marblehead Squash.

This engraving represents a new squash sent out this season for the first time by Jas. J. H. Gregory, of Marblehead, Mass. It is said to be, as a rule, characterised by a shell of a more flinty hardness than the Hubbard. It is usually thicker and flatter at the top. It has a greater specific gravity. The flesh is of rather a lighter color than the Hubbard, while its combination of sweetness, dryness and delicious flavor is something really remarkable. In yield it equals the Hubbard, while its keeping properties are declared to surpass that famous variety. In the important matter of purity, it excels the Hubbard and every squash, Mr. Gregory says, that he has ever raised. Its outer color is a light blue; not to be confounded with the blue colored squashes that come at times from the Hubbard seed.

The Jujube and its Cultivation.

It is a matter of astonishment with strangers that so little fruit is grown in the South generally, and that the immense capabilities of our climate are not made more extensively available in the growth of both native and foreign plants of a semi-tropical character. It is strange indeed that a fruit so perfectly adapted to our climate as the Jujube is so little known. This is what our friend and correspondent Robert Chisolm says of this little tree and its fruit:

The Jujube is a tree of the third size, grows about as readily as our Chicasaw Plum, and like it suckers freely. Its growth is rather singular but ornamental, its flowers very delicately fragrant, and its fruit may be termed *fascinating*. for one never tires of eating it, besides it being decidedly good for lung complaints. The Jujube paste of confectioners is named from it, although it never has any jujube in it. The tree is quite thorny, nearly as much so as the Osage Orange, and would make a good hedge, especially in sandy soils which suit it best; although it is not a bit more fastidious about its soil than is the Chicasaw Plum. When it is disposed to grow vigorously and bear little fruit, the limbs are weighed down in order to check excessive growth and promote fruitfulness. Its foliage is singular and rather pretty. It requires no other pruning beyond that of giving when young the shape desired.

Twelve quarts of soot in a hogshead of water, will make a powerful liquid manure, which will improve the growth of flowers, vegetables or root crops. In either a liquid or solid state, it makes an excellent top-dressing for grass or other cereal crops.

New Japan Cockscomb (Celosia Japonica.)

This is an entirely new variety of Cockscomb, received from Japan last year, and of which that well-known Seedsman, James Vick, of Rochester, New York, has the entire stock in this country. It is described in Mr. Vick's Catalogue as far better and more brilliant than the old varieties, a single plant being an object of great beauty, while a bed containing a dozen plants is unequalled by anything known among florists. The branches, from the roots to the smallest leaf-vein, are scarlet or crimson, the "combs" are almost as delicately cut as ruffled lace, often in pyramidal masses, and the colors the brightest imaginable. The accompanying engraving gives an idea of the habit of the plant, but can convey no correct notion of its effect, which depends so much upon its colors.

Seasonable Orchard and Garden Notes.

A List of Fine Roses.

Florists are fond of making lists of the best varieties of the different species of flowers cultivated, and especially of roses, and we see here, as in everything else, that tastes differ, no two giving exactly the same names throughout. Here are a few on which there is a very general agreement:

General Washington—Brilliant, rosy carmine, approaching to scarlet; very large and fine form; free bloomer.

Caroline de Sansal—Clear, delicate flesh color, becoming blush; large and full.

La Reine—Brilliant, glossy rose color; very large; cupped and beautiful.

John Hopper—Deep rose, with crimson centre; very large and fine form.

Victor Verdier—Clear rose, globular, fine form, and free bloomer.

General Jacqueminot—Rich fiery crimson; abundant bloomer. One of the best for bouquets, but casts its petals too soon for a garden bloomer.

Baronne Prevost—Deep rose, very large and fine; free bloomer; vigorous grower.

Anne de Diesbach—Bright rosy carmine; beautiful form; very large and double.

Madame Alfred de Rougemont—Pure white; large and very double; profuse bloomer.

Triomphe de l'Exposition—Rich deep red, shaded with crimson; flowers in large clusters.

Sidonie—Light pink; very large and full; fine in autumn.

Wood as Manure for Grape Vines.

A gentleman in North Carolina, some years ago, dug a trench ten feet long, three feet wide, and two and a half feet deep, which he filled with green round red oak logs, six to eight inches in diameter, bark on, to within about six inches of the top, and

then filled the remainder with surrounding dirt. This done, he took a cutting from a vine that had been set out four years previously, and set it out at one end of the pile. This vine grew with remarkable vigor and has borne wonderful crops, exceeding, last season, the yield of the older and larger vine from which it was taken; and the grapes were also much larger and sweeter. There may be a valuable hint in this experiment. The gradual decay of the wood furnishes nutriment to the vine, while, at the same time, it promotes drainage, the circulation of the air and the retention of moisture. The vine spoken of was a variety of the *Vitis rotundifolia*, Michx., called there the Babson, and the same, we think, as is generally known as Flowers' grape.

The Bearing Year of Fruit Trees.

Every fruit grower knows that there is a tendency in many apple trees, and to some extent in other fruit trees, to bear only every other year, or, at least, to make a heavy crop one year, and the next to produce little, if any fruit. This comes, in the first instance, simply from the exhaustion induced by overbearing, which leaves the tree too weak in the fruit-producing elements to bear again till it has had one year in which to recuperate; but, finally, this becomes, so to speak, a fixed constitutional habit, and is perpetuated by grafting or budding. To correct this habit, pick off the larger part of the fruit, the first bearing year, and thin out well whenever too much fruit sets, and such trees will acquire the habit of bearing every year.

Swamp Muck for Grape Vines.

A very intelligent gentleman of Sampson County, N. C., informed a correspondent that one of his neighbors had a Scuppernong vine growing in one corner of the yard which needed manuring, but on which he did not wish to use barn-yard manure. He, therefore, had recourse to a neighboring swamp, from which he obtained muck, and spread it under the vine to the depth of several inches. Additions were made each year, so as to keep the space thus covered even with the outer edge of the vines overhead. The effect surpassed his expectation. The grapes were soon increased about 50 per cent. in size, and the quality also correspondingly improved. Many persons who saw and tasted them procured cuttings, under the belief that like would produce like; but when set out without the muck, the grapes soon fell back to the ordinary standard. Composting the muck with lime and ashes before applying would be an improvement.

A White Calycanthus.

Mr. Berckmans reports in the *Farmer and Gardener*, that a white flowered variety of the *Calycanthus* has been discovered in middle Georgia. It blooms continually until frost. This, if equal in other respects to the old kind, will prove a great acquisition. By the way, does the Calycanthus ever succeed here in the coast region of the South? Has any one good thrifty specimens, within reach of the salt air? We have planted several fine well rooted shrubs here in Charleston, at different times within the last few years, but they have invariably died, without

any apparent cause; and our friend, Mr. Robert Chisolm, reports a similar experience on Chisolm's Island.

Cucumbers on Trellises.

The *Gardener's Monthly* calls attention to the fact that where the cucumber grows wild, it spreads over bushes and trees, and the growth and product is enormous. All plants with tendrils prefer to ramble in this way; he adds "no one who has not tried, can have any idea of the luxuriant growth of a cucumber when trained to a stake which has a set of stubby side branches left along its length. Some which the writer saw, might be taken at a distance for some vigorous kind of ornamental gourd—and the crop was enormous."

Applied Chemistry and Mineralogy.

All communications and notes of inquiry intended for this Department, as well as specimens of soils, fertilizers and minerals for analysis or description, should be addressed to Charles U. Shepard, Jr., M. D., No. 20 Broad street, Charleston, S. C.

Soils.—V.

In continuation of the study of some soils from the Southern States, the writer presents to the attention of the readers of the Rural Carolinian, an analysis of the salt-marsh mud, which is found in such enormous quantities in the low country on this coast. The sample submitted for investigation was collected by Mr. J. A. Hume, from the vicinity of St. Helena Sound, and was carefully analyzed by Dr. W. D. Wamer, the writer's assistant.

This mud contained so much water as to be semi-liquid, and was of a dark brown color when fresh. Its physical condition, when air-dry, is that of a very fine and smooth powder. The preliminary examination of the fresh article afforded the following results:

	p. c.
Moisture, hydrostatic, *i. e.* expelled on air-drying	52.90
Moisture, hygroscopic, *i. e.* expelled at 212° F.	10.60
Organic matter, with some water of combination, (expelled at low red heat)	10.52
Fixed ingredients	25.98
	100.00

Moisture forms, as is above shown, a very large percentage of the entire weight of the fresh mud. The air-dry article contains, therefore, about double the quantity above given of organic matter and fixed ingredients. The amount of *nitrogen* in the air-dried mud is 0.152 p. c., which would be capable of producing, under favorable circumstances, 0.185 p. c. of ammonia. The air-dry mud was subjected to the treatment with cold and concentrated hydrochloric acid, by which means nearly everything (except siliceous matter) was dissolved; the residue being a mass of sand, discolored apparently with organic matter.

Analysis of air-dry salt-marsh mud by cold hydrochloric acid:

	p. c.
Phosphoric Acid	0.0629
Carbonic Acid	0.8400
Sulphuric Acid	0.4226
Silicic Acid	0.3280
Potash	0.1908
Chloride of Sodium	1.4769
Lime	0.4200
Magnesia	0.3170
Alumina	1.1310
Sesquioxide of Iron	1 8600

	p. c.
Fixed ingredients soluble in acid	7.0492
Fixed ingredients not determined, nearly entirely insoluble sand	58.1101
Organic matter	22.3354
Moisture and water, expelled at 212° F	22.5053
	100.0000

It is not difficult to understand how an addition of this material to worn-out lands was sufficient to enable them to produce more abundant crops. The extreme fineness of the mud, its comparative richness in organic matter, the apparently ultimate union of the foregoing with the fixed ingredients, and the valuable constituents of the last, all combined to render it an admirable natural fertilizer. But the difficulties which attend handling such wet and adhesive material, the disinclination of laborers to dig it, and the large quantities which must necessarily be applied, may largely counterbalance the advantage accruing from its use. That formerly, under favorable conditions of labor, it was employed with benefit, is a matter of experience; and it is certainly not impossible that, at least in certain localities, its application to the old fields may be attended with profit. It lies at the door of every sea-coast planter, and whether he can get any benefit from its use, is simply a matter of cost in handling.

Analysis of a *river-swamp* soil from the Edisto:

This soil, which was obtained by Dr. Wamer from the plantation of Capt. John Bowman, Orangeburg County, South Carolina, resembles in appearance a vegetable mould. It extends to the depth of about eighteen inches, the sub-soil being a tough pipe-clay. The land is subject to frequent overflow from the river, whereby the soil becomes so wet and "boggy" as to render cultivation next to impossible. Properly drained and cultivated, these lands are exceedingly fertile, and are reputed to be capable of producing over 500 lbs. of lint cotton to the acre without any fertilizing application. The analysis given below was executed by Dr. Wamer. The preliminary examination of the fresh soil gave:

	p. c.
Moisture, hydrostatic, *i. e.* loss on air-drying	21.9760
Moisture, hygroscopic, *i. e.* loss at 212° F.	3.5602
Organic matter, with some water of combination, (loss at low red heat)	14.9600
Fixed ingredients	59.5038
	100.0000

The amount of *nitrogen* contained in the air-dry soil is 0.158 p. c., which is equivalent to 0.192 p. c. of ammonia. The soil was subjected to treatment with cold and concentrated hydrochloric acid, as recommended by Wolff. When air-dry the soil passes readily through a fine sieve, whose apertures have a diameter of one millimetre.

	p. c.
Phosphoric Acid	0.0737
Carbonic Acid	0.1140
Sulphuric Acid	0.0403
Silicic Acid	0.0429
Potash	0.0070
Chloride of Sodium	0.0748
Magnesia	0.2400
Lime	0.2034
Alumina	0.5800
Sesquioxide of Iron	0.2730

	p. c.
Fixed ingredients soluble in cold hydrochloric acid	1.6491
Fixed ingredients insoluble in cold hydrochloric acid, being nearly pure sand	74.6144
Organic matter	19.1736
Hygroscopic water, *i. e.* expelled at 212° F.	4.5629
	100.0000

The analysis of this soil is quite interesting on account of its reputed fertility. The analysis shows the large percentage of organic matter, common salt, and alkaline earths (magnesia and lime). The amount of potash and phosphoric acid is rather small. Still the fineness of the soil, and its strongly organic character may account for its fertility.

With the preceding analyses of soils and natural fertilizers, (selected from quite a number executed in this laboratory,) the writer closes, for the present, the consideration of the investigation of such materials by means of strong acid re-agents, either hot or cold. He is all the more led to this step by his desire to present to the attention of the readers of this journal a somewhat detailed account of a most interesting series of articles on the "mineral nutrition of plants," which have been published during the past year by M. L. Grandeau, Director of the Experimental Station of the East in France, in the *Journal d'Agriculture Pratique*. Baron V. Liebig has expressed in a very cordial letter to M. Grandeau his high appreciation of these researches; which recommendation, although it must be exceedingly gratifying to the recipient, is nevertheless, not necessary for the establishment of their worth, since they carry with them that conviction which belongs to great personal labor, combined with a fair criticism of the work of others.

Several analyses of soils have been executed in this laboratory by the method of M. Grandeau, the results of which the writer intends publishing after he has communicated an abstract of the articles above mentioned. S.

Laboratory for Analytical Chemistry, 20 Broad street, (up stairs) Charleston, S. C.

Natural History Applied to Agriculture.

Specimens of insects, securely packed, (according to instructions given in The Rural Carolinian, for April, 1872,) with letters of inquiry, entomological notes, etc., should be addressed, (post paid,) to Mr. Charles R. Dodge, Washington, D. C.

A Word in Season.

Now that spring has come again, and insects are beginning to creep forth from their winter hiding places in the old rubbish piles or fence corners, it is time to renew our invitation of one year ago to the readers of this journal to co-operate with us in making our Natural History Department both interesting and instructive.

You are the persons most interested in this great warfare, and the ones most benefited by any suggestions we may be able to make in regard to the history and habits of the various insects affecting your crops.

If you find insects in the field, the orchard or the garden, or even on a petted house plant, that are new to you, send them to us, with all you know of their history and we will try to tell you the rest. If you have questions to ask we shall only be too glad to do all in our power to answer them.

With the mild climate of the South, insects are much more abundant than at the North, and greater precautions are to be taken against them, but first we must become acquainted with their habits, time of appearance, place of depositing eggs, &c., before we can successfully combat them, and such information is only to be obtained by observing and reading. We are trying to do our part, and only ask you to co-operate by sending us *your views in exchange for ours.* At the same time DON'T FORGET TO SEND THE specimens.

New Remedies for Insects.

We give below a few foreign remedies against the attacks of some of our most destructive insects, that are not only simple, but vouched for as reliable.

Pear Slugs.—This insect, which sometimes plays such sad havoc with the foliage of plum and cherry trees, may be destroyed by frequent applications of a mixture of lime, soot and soap-suds, by means of a garden syringe. The mixture is made by adding to twelve gallons of cold water one bushel of soot and half-a-peck of unslacked lime, allowing it to stand one day to settle, after which is added one pound of soft soap dissolved in warm water.

The White Grub.—This destructive insect, producing in this country the May beetle, (*Lachnosterna*), and in Europe the beetle known by the common name of "Cockchafer," is well known to many of our readers through the damage it does to pastures and grass lands.

Their mode of warfare is to devour the roots of the grass, causing the sod to die out in spots, and it is said that simply applying to the affected places water, in which petroleum has been stirred, will exterminate them. It is also recommended to keep down insects on plants. The small quantity of petroleum seems to impart its disagreeable properties to a large amount of water, and applied in this manner, the plants are uninjured.

Mealy-bug.—The following remedy, tried upon grape vines (under glass) in Kellermont Gardens, Glasgow, was a complete success: The vines, which were badly affected, were taken down, the loose bark scraped off, after which the back walls of the house were given two coatings of lime wash and glue, adding half-a-pint of turpentine to each gallon of the mixture. The rafters and glass were also given at intervals three washings of turpentine, and finally the vines themselves were given a good coating of the following mixture: Three ounces of soft soap, three ounces flowers of sulphur, one pint tobacco water, two wineglassfuls of turpentine, one gallon of hot water, and clay enough to give it the consistency of paint. The result, with a top dressing of loam and horse dung, was healthy vines, and a fair crop of grapes, clean and free from mealy-bug.

Destroying Caterpillars.—An excellent remedy, which has been used on a large scale in Southern France, consists in a dilute solution of sulphide of potassium, at the rate of about one part in five hundred. The infested plants are to be sprinkled with the decoction by means of a garden syringe, and it is said that vegetation is not in the least injured by its application.

Answers to Correspondents.

The Bill-Bug, or Corn-borer.—H. P., Orangeburg County: Your letter was received, enclosing merely the head and thorax of a dark-colored snout-beetle; enough, however, to identify it as a *Sphenopherus*, a genus of beetles that seem to be special enemies to maize, by their habit of boring or eating into the stalk.

The beetle is from four to six-tenths of an inch in length, of a blackish color, and is provided with a long snout or "bill," which shows it to belong to the family of curculios. Mr. Glover mentions the insect in an article published nearly twenty years ago, and quotes the following statement of Senator Evans, in regard to its habits: "The perfect insect eats into the stalk of corn either below, or just at the surface of the ground, where it deposits its egg. After changing into a grub, the insect remains in the stalk devouring the substance, until it transforms into the pupa state, which occurs in the same cavity in the stalk occupied by the grub. It makes its appearance the following spring in the perfect state, again to deposit its eggs at the foot of the young corn plants. These insects destroy the main stem, or shoots, thus causing suckers to spring up, which usually produce no grain, or, if any, of very inferior quality. Swamp lands, or low grounds are the places most generally attacked."

In the Northern States there is a species of *Sphenopherus*, described by Mr.

Walsh in 1867, under the name *Sphenopherus zeæ*, which was exceedingly destructive to corn in New York, and has recently been complained of in Connecticut and Massachusetts. This insect is somewhat smaller than its Southern relative, though closely resembling it; in fact, the description of one as regards form and color, will apply to the other as well. The beak of the Northern species is black, curved down, and has at the base a slender pair of antennæ, also black with the exception of the tips, which are whitish; before the middle of the thorax there is a polished diamond shape space surrounded with grayish punctures. The wing covers are marked with longitudinal rows of larger punctures. This species is supposed by Mr. Walsh to live in the larval state in moist wood, in damp or wet situations, as around old piers, changing its habits with its larval skin, and only entering the corn-stalk as a mature beetle.

Mr. Smith, State Entomologist of Connecticut, in a recent report speaks of a field near Guilford, in that State, which had been dressed with chip manure, and from which a plentiful supply of the beetles had been obtained;* but this chip, dirt-eating habit, does not agree with the habits of our Southern species, as given above, and so we are in the dark as to the best remedy. Will not our correspondent help us out in the matter, by a little original investigation next summer? If the worm does live in the stalk, remaining in the pupa state through the winter, the remedy, as proposed by Mr. Glover, is to pull up the stalks after the corn has been housed, pile them in heaps, and burn the whole mass. At any rate, a very perceptible decrease of the "bill-bug" has been observed where the practice of burning the root was followed up. Mr. Walsh suggests that this is the insect called "bud-worm" in some parts of the South; will some of our correspondents give us a little light on the subject, and to make a sure thing of it, as we would much like to see this frequently mentioned, yet mythical (?) "bud-worm," will not some of our readers send us a few?

Our Native Grasses—II.

18. Fescue Grass—(*Festuca.*)

We have several native species of this grass, but the cultivated European "Sheep Fescue," (*F. ovina*) is not naturalized at the South. Our native species are not of much value. The "Hard Fescue" (*F. duriuscula*) is pretty well naturalized and is often seen on light rich soils.

19. Lyme Grass—(*Elymus Virginicus.*)

Two native species of this evergreen grass, (sometimes called *Wild Rye,*) growing in tufted clusters from perennial roots two or three feet high. They remain green all winter, and push forward rapidly in early spring. This is the largest of the two, and is sometimes cultivated for its green foliage in winter.

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* As Mr. Smith has kindly forwarded us specimens of this insect, will not some of the many readers of this Journal favor us with specimens of the "bill-bug" this coming season, that we may compare the two species?

20. Rye Grass—Darnel—(*Lolium Perenne.*)

Introduced from Europe, and partially naturalized, sometimes called "Ray Grass."

The "Italian Rye Grass," (*L. Italicum*, is highly recommended by the Agricultural Department at Washington, and seeds have been distributed freely last winter through the Southern States.

21. Oat Grass—(*Arrhenatherum avenaceum.*)

This grass, introduced and now extensively naturalized, has had a considerable reputation, and been much cultivated at the South. The number of names it has received is an evidence of the value attached to it, and to its wide spread extension. It has in different places been called "Texas Oats Grass," "Fall Oats Grass," "Mysterious Grass," "Mesket Grass," "European Grass," &c.

22. Sweet Scented Vernal Grass—(*Anthoxanthum odoratum.*)

Introduced and naturalized mostly about the lower ground along the coast region.

23. Paspalum.

Twelve Southern species of this grass—none of special value for cultivation. The stems are stout and succulent, and those growing in rich, damp soils furnish good natural pasturage, and are sometimes cut for hay. Some of the species attain a size of two to three feet high.

24. Panicum.

This is the largest of the grass family, and contains thirty-three Southern species. Many of them are confined to poor, light, soil, and not of any economical value. The common *Crab Grass* (*P. Sanguinale*) though so generally prevailing in all cultivated grounds, is an introduced plant. It is, perhaps, the very best grass that we have at the South for hay, growing well in all rich soils, not too wet, and producing an abundant crop.

Another coarser and larger species, *P. crus-galli*, or Barn-yard grass, growing in damp, rich, soils, makes a rich, succulent growth for pasturage during the latter part of the summer, but is too coarse for hay.

The "Hungarian Grass," *P. Germanicum*, is not naturalized here.

25. Hard Grass—(*Stenotaphrum Americanm.*)

An evergreen grass of low habit, confined to the damp sandy soils of the coast from Florida to South Carolina. It make an excellent winter pasturage, but not large enough for the scythe.

26. Gama Grass—(*Tripsacum dactyloides.*)

A large, freely, growing, coarse grass, springs up from perennial tufted root stalks, five to six feet high, with leaves an inch wide. It was at one time recommended by the Agricultural papers as a valuable grass, but very little is now heard of it. Found in rich, damp, clay soils, and shooting up early in spring.

27. Broom Grass—Broom Sedge—(*Andropogon.*)

Of this well known, coarse and wiry grass, we have eleven Southern species, none of any value for pasturage or hay. They are hardy, and having perennial

tufted roots, gradually take possession of fields thrown out of cultivation, to the exclusion of everything else.

SORGHUM.

We have three native species, all confined to dry, sandy soils, and growing from three to six feet high. Of the cultivated Sorghum, *S. vulgare* is the *Doura Corn*, *S. saccharatum*, the *Broom Corn*, and the varieties planted for sugar and syrup—*S. cernuum* is the *Guinea Corn*, and *S. Halapense* is the *Cuba* or *Guinea Grass*, and the *Means Grass*.

29. BUFFALO GRASS—(*Buchloe dactyloides*, Engelmann.)

This remarkable grass is found "in the Western Prairies, from the British possession throughout to Missouri Territory, Nebraska, Kansas and New Mexico, down to Texas and North Mexico," and well known to herdsmen and hunters under the name of *Buffalo Grass*. I saw it in 1869, in Texas, growing abundantly a few miles from Corpus Christi, and in the prairies near Indianola; and it was there called "*Meskit Grass*." It was represented as one of their best pasture grasses for their herds of cattle, nutritious and always preferred by animals to any other.

The grass has the peculiarity (possessed by very few other grasses) of bearing its male and female flowers on separate plants, (and called in botany (*diœcious.*)

The male plants are the largest, growing from six to ten or twelve inches high, and being most conspicuous, are those most frequently seen and noticed. They grow in dense tufts, and from these, send out their shoots.

The true *Mesket Grass* is *Bouteloua hirsuta*, growing also in the Western Prairies.

30. MEADOW SOFT GRASS—(*Holcus lanatus.*)

Introduced from Europe, and cultivated at one time under the name of *Mesket Grass*. It is not naturalized perfectly, but will grow for many years in favorable spots. Plant, soft, downy, with a pale tint, growing about two feet high, with a large open pale-colored panicle.

31. CHEAT GRASS—CHESS—(*Bromus secalinus.*)

Introduced from Europe, and troublesome at the North in the grain fields. I have never heard of its being naturalized here.

32. RESCUE GRASS—(*Bromus breviaristatus.*)

A native grass of our Western Territory, which made a great sensation a few years ago under the name of Rescue grass. It is an annual, and seems hardy and climatized here at the South, as it springs up annually from seed; growing about one to two feet high. Found in the mountains of Nevada, and extending from Washington Territory to New Mexico.

AMERICAN CANARY GRASS—(*Phalaris.*)

A native species found most generally in damp soil, along the seaboard region from Florida to North Carolina, and Westward to Texas. It is an early spring grass, and a fast grower, and might be worthy of more extensive propagation. I saw it near Houston, Texas, well grown and in bloom early in April.

H. W. RAVENEL.

Patrons of Husbandry and Agricultural Societies.

"Little John" and the Last Fair.

For the first time since the inception of the Rural Carolinian, am I induced to combat an article in its table of contents. The recriminations of "Little John" in the February number cannot pass unnoticed; first, because they are direct personal accusations, and, secondly, because they are incorrect, if not false statements. I know not who "Little John" is, nor do I even suspect. He has the advantage of me, because writing anonymously, he may assume to be the index of public opinion. I state my own views, but write *ex cathedra.*

"Little John" declares the material development of South Carolina to be his cherished hope, and believes the organization of the Agricultural and Mechanical Society vitally important in effecting this end; and yet "he knows many good farmers," (perhaps "Little John" was one of them,) "and other citizens," who refused to participate in our Fair, because "prominence was given to horse racing in the premium list."

There is an evidence of pharasaical sanctity in this parade, that to "Little John" must be refreshing. But to men of good sense, what a flimsy pretext. Anxious to develop our impoverished State, but because the channel through which it is to be done may not comport exactly, in all its parts, with *my* idea of propriety, I will be magnanimous (?) and stand aloof. Puerile conduct. As well might the minister of the Gospel say, "The majority of my congregation are sinners, I'll therefore not preach to them." Surely "Little John" has assumed an appropriate *nom de guerre.*

If he will consult the Premium list he will discover, that more money was appropriated and a greater variety of premiums was offered for field crops, cattle, and draft, brood and saddle horses than as "speed premiums." Indeed, under the last head were not included one-fifth of the premiums offered, and only a single trot and a single race were announced for each afternoon, after the labors of the day were over, when "Little John" and all his *confreres* might have retired from the grounds. But did they do so? I'll venture, that neither he nor they turned their backs upon the course when those noble steeds were vying with each other with all might and main. Where then was the "prominence given horse racing in the premium list?"

Immorality meets with no favors nor countenance from me; but if as a breeder of fine stock, I can add thousands of dollars to the value of a single colt by proving to the world he can trot a mile in less than 2.30, I certainly have a legitimate right to prove it, and it should be expected of me to do so at our stock exhibition. Should another planter have a similar colt on exhibition at the same time and place, where, the "disgrace" of competition for a premium? If I or he was to become excited over the contest and wager a private purse, (are "Little John's" skirts clear?) then the door is open for the introduction of vice. But must I decline exhibiting my well bred colt, because others chose to bet on or against him? As well might I refuse to compete for any premium, because there are others who will bet against my success. This same reasoning, of course, holds good with speed or race horses.

Had I control of this portion of the premium list, I would multiply the premiums, but confine the entries to South Carolina raised horses.

The horse is the most noble of all animals, and there is something elevating in ultivating an attachment for him. There is nothing grovelling about him. And

if our Society recognizes him simply as a draft, saddle or brood animal, and never allows him the privilege of exhibiting his speed, in harness or under the saddle, our Fairs would become monotonous, and public interest in them would be lost. That too much interest is manifested, during Fair week, in the race may probably be true, but neither the Society nor the Premium List is culpable for this. They do not propose improving the morals of our people, and if "Little John," in this corrupt age, expects to effect such an end by wholesale denunciations, he has taken upon himself a fruitless labor.

"Little John" says, "gambling and drinking establishments, and an army of tricksters and cheats everywhere covered the ground," during our last Fair. Unless the races were "gambling," I have never heard of any other species admitted on the grounds. Perhaps the "tiger," bit our puritanical friend, and hence he knows. I wish him better luck next time.

If the "tricksters and cheats" were eye-sores to his moral vision, be it known unto him, that these cosmopolitans contributed largely to the treasury of the Society, and but for them the Society would now be much deeper in debt. If they are excluded next Fall, will "Little John" and his "many good farmers and other citizens," come up manfully to the rescue, and prevent pecuniary loss to those few citizens, who, from the beginning, have shouldered the responsibility of the Society and its Fairs, voluntarily, and without fee or hope of reward?

Of those "drinking establishments," there were but two, under the control of the same efficient supervisors, and "Little John's" charges were the first accusations I had heard against them. An effective police were employed, and not a single report was made of drunkenness or disorderly conduct. Perhaps "Little John" strayed into one, and if he did, I will not ask him what was the consequence.

Wherever men congregate for festive, social or competitive purposes, wine and strong drink will be imbibed. Nowhere have ever I seen an exception to this general rule, and in no State in the Union can or will an Agricultural Fair ever be held, that such indulgence can be prevented. Moral restraints, or legal restrictions, may be thrown around the too free indulgence, but any attempt to prohibit its use or sale teetotally would be a failure. Hence, less injury is done society at large by recognizing orderly saloons on our Fair grounds, than any futile effort to prevent liquor drinking. The secret bottle is more damaging and sinful than the open glass.

Much more might be said in reply to "Little John," but I feel I have trespassed already upon the space of the RURAL, and the patience of its readers, and my only apology is, that I was one of the originators of the South Carolina Agricultural and Mechanical Society, and have been from its commencement the Secretary.

D. WYATT AIKEN.

Cokesbury, S. C., February 5th, 1873.

The Georgia State Agricultural Convention.

The Georgia State Agricultural Convention assembled at Girardey's Opera House in the city of Augusta, on the 11th of February, and was called to order at 11 A. M., by Gen. A. H. Colquitt, President of the Georgia State Agricultural Society. The session lasted three days. The proceedings were opened with prayer by the Rev. Mr. Cook. About two hundred delegates were present, principally Georgians, but also comprising representatives of South Carolina, Tennessee and New York. An address of welcome was delivered by Mr. J. J. C. Black, of Augusta, and President Colquitt delivered his opening address, according to the rules

of the Society. The President's address was mainly important in its reference to the agricultural interests of Georgia, which were treated of as gloomy and discouraging. It enforced the necessity of men being highly educated to make good farmers.

A committee was appointed to prepare suitable resolutions on the death of Com. M. F. Maury, which, however, failed to make a report. Another committee was appointed on direct trade and immigration, of which Hon. George A. Trenholm, of Charleston, is chairman. Upon this committee devolved the most important work of the Convention. It made three separate reports, recommending that Congress be memorialized in favor of the projected canal between the Mississippi and the South Atlantic Coast, and to aid direct steam communication between the same coast and Europe by mail contracts, subsidies or otherwise, and by temporarily allowing citizens of the South to purchase and register foreign built ships under the United States flag. That the Legislatures of the various Southern States be invoked to aid direct trade and immigration by bounties, &c. That all possible encouragement be given to projected straight line railroads between the South Atlantic Coast and the West and Northwest. That a hand-book, setting forth the advantages of the South, be prepared, printed in the different languages of Europe, and distributed through European countries. And that all possible encouragement be given to induce the introduction of skilled labor and capital into the South. All of the committees' reports were adopted. A long and interesting address on the introduction of labor and capital into the South and direct trade was delivered by Col. C. W. Howard. An address on stock raising by Col. R. A. Alston, a lecture on agricultural chemistry by Prof. White, of the Georgia State University, an address on the Patrons of Husbandry by Col. D. Wyatt Aiken, and a report on the value of commercial fertilizers, from actual experiments by Dr. H. R. Cook, were also heard. Col. Aiken's address produced great effect, and resulted in the organization of eight Granges. Interesting discussions on stock raising and fertilizers took place. On the latter subject Col. G. W. Rains made many valuable suggestions. A resolution to establish a Southern Department in the American Institute Fair of New York city, for the display of Southern productions, was adopted. The committee on memorial to Congress reported a suitable one, which was adopted. A report was also made and adopted in favor of constructing a straight-line railroad from Augusta to Chicago.

The Convention may be regarded as having established three important facts: that the agricultural prosperity of South Carolina is in advance of that of Georgia; that a community of interest between the two States is becoming recognized; and that the people of the South are waking up to the necessity of diversified pursuits in agriculture, development of mining and manufacturing interests, straight railroads to the West, direct steam communication with Europe, and the introduction of skilled labor and capital. SPECTATOR.

The State Agricultural Society and its Fairs.

Having observed "Little John's" comments on the State Agricultural Fair meeting of our city, I deem it proper, while concurring with him on several points, to state that "our grand old Society,"—"reunion Society"—reunion of decency, and the good people of the State—has never enjoyed the blessing of a charter by which they could exclude all the obnoxious features referred to by him; but I beg to assure our correspondent that things will be different at the next meeting. It

is true, contests of speed and premiums for the temperate advancement of the noble blooded horse will be a feature of the next meeting, but all of that will be far removed from those who do not delight in such pastimes, and things will be so arranged that everywhere one can indulge his or her own peculiar tastes, in whatever way suits them best.

The Auxiliary Joint Stock Company, consisting of a small number of unselfish gentlemen, of undoubted character and means, has come nobly to the rescue of the good old Society, and under the combined auspices of the two corporations, our people may look for one of the grandest gatherings of the untarnished people of the old State that has ever been seen in Columbia, and the total and utter exclusion of every obnoxious feature complained of.

CONFIDENCE.

To the Masters and Secretaries of Granges.

We are anxious to publish, for the convenience of the Order, and the information of the public, a full and correct list of the Subordinate Granges in South Carolina. Will the Worthy Master of each Grange, whether old or new, give us, (or instruct the Secretary to do so) the name and number of his Grange, the names of the Master and Secretary, and the Post-office of each, and the County in which the Grange is situated.

New Granges in South Carolina.

Name.	*Master.*	*Secretary.*	*Secretary's P. O.*	*County.*
Gladdon's Grove Grange,	J. C. Caldwell,	J. G. Johnston,	Rocky Mount,	Fairfield.
Bethel Grange,	J. K. Y. Nance,	E. P. Jones,		Newberry.
Jalapa Grange,	S. G. Welsh,	E. P. Chalmers,		Newberry.
Liberty Hall Grange,	J.W. Anderson,	Thos. Duckett,		Newberry.
Bull Run Grange,	R. T. Mockbee,	J. A. Reedy,	Chester C. H.,	Chester.

Miscellaneous Correspondence and Notices.

Composting Ashes with the Droppings of Fowls.

Editor of the Rural Carolinian: I made about one ton of manure according to a formula published in my Rural Carolinian last spring, gathered from the droppings of about twelve or fourteen chickens of the common sort; my hen-house has a good roof and close floor, the great secret of the amount accumulated in one year, but before planting time I was afraid of losing my labor, as a subsequent number condemned the use of ashes in the above formula—equal parts of hen manure, plaster, ashes and half part of salt by measure—I used only one bushel of salt; I concluded when agricultural doctors disagree, disciples were free to throw their physic to the dogs or to their cotton patch; I did the latter, and was pleased with the *operation.*

So I will tell you "all I know about hen manure." One dollar's worth per acre, counting only cost of plaster and salt, increased my crop fifty per cent.,; or where there was no manure, I picked six lbs.; where there was one dollar's worth of the compound per acre, nine lbs.; in the next row there was 125 lbs. per acre, standard commercial fertilizer, as good as any in the market, the yield was the same; one cost one dollar, the other four per acre. On one acre of better land (sandy,) worked in cotton for years in succession without manure, one dollar's worth made 1,000 lbs.; on other acre adjoining it with 125 lbs. commercial fertilizer, produced 1,000 lbs. My crop was planted during the dry weather, consequently I had no stand until the last days of May, then both grew off beautifully; I could see no difference. From an average of about thirty chickens, I can from last to next spring, save eight hundred lbs. of dry manure.

Now for what I don't know about farming. So you will please tell me, Mr. Editor, if the above results were owing to accident, or in spite of the ashes? I can with the ashes make three tons this spring; ought I use them or not? If not, tell the very best and most economical way to run my little guano factory, and I will consider myself ten times repaid for my subscription to your excellent magazine. I have no hesitation in saying that sixty chickens, if properly housed and attended to, will produce ten barrels dry manure in one year; that with ten of plaster, ten of ashes, and three of salt, will be thirty-three bbls., or say five tons, at a cost of about eight dollars per ton, enough to fertilize a two-horse farm, saving the trouble, time and cost of hauling near two-thirds in a ton, that itself is a very important item to us up-country farmers, who have to wagon over such miserable roads, that caused Gen. Sherman to diverge so far in his intended grand march on the "future London of the South."

P. S.—Since writing the above my RURAL CAROLINIAN has come to hand, containing a table worth the subscription, showing the comparative amount, cost and production of a great number of standard manures, mine will compare favorably with any of them, considering cost and convenience.

The February number of the RURAL CAROLINIAN, contains a caution from the *Rural World* against the use of ashes. Please, Mr. Editor, decide, if possible, in your next number this goose, or rather chicken question, and you will oblige and benefit a number of your admirers, if not now, will be subscribers, for I have been lending mine, and it is just beginning to have its effect. J. S. GRIBBLE.

The extract from the *Rural World*, to which our correspondent refers, was inserted without special attention being directed to the point noted, and merely as a general statement of the value of potash as a fertilizer. We re-indorse the recipe for the hen-manure, ashes, plaster and salt mixture, published last spring, and Mr. Gribble's experience is as good a confirmation of its value as could be desired; besides, we have referred the matter to a professor of Agricultural Chemistry, who says that if *unleached* ashes be used, nothing but benefit can result from the mixture.—ED.

I have tried all known ways of covering corn, the hoe, the plough, the harrow, and the foot of the dropper, but I have found none so good as the board, just such as is commonly used for covering cotton. It is quicker by far than anything but the harrow, and does the work better than that. It covers it an even depth, and pulverizes the earth round the seed. I have tried it and found it to work like a charm, and I hope that others will try it and have a like experience.—S. W. B., *in Farm and Home.*

Experiments with Cotton Seed as Manure.

EDITOR OF THE RURAL CAROLINIAN: Among the numerous matters discussed by our club last winter was the comparative value of cotton seed, whether it was of more value applied green, rotted or composted with Charleston phosphates; and what quantity to the acre. There being quite a difference of opinion among us, especially as to the quantity to be applied to the acre, the club ordered a number of experiments in its use to be made, I send you mine with the hope that it may be of service to some of your many readers. The ground selected was poor rolling, sandy land, recently cleared. It was divided into acre plats, manured as above, planted in cotton, and cultivated in the usual manure. This cotton was carefully picked and weighed. In apparent natural fertility No. 1 was the best, and so on to No. 7, which was the most inferior.

W. H. EVANS.

Experiment in the use of Cotton Seed as a manure made by W. H. Evans, for the Society Hill Agricultural and Pomological Club.

No. Plat.	MANURES.	Cost of Manure.	Production Seed Cotton.	Gain in Production.	Net Gain in Money.	Per Cent. on Cost Manure.
1	Not Manured		326 lbs.			
2	200 pounds Etiwan Guano	$6 00	673 lbs.	347 lbs.	$14 82	247 p. c.
3	40 bushels Cotton Seed and 200 pounds Stono Phosphate, composted	9 25	725 lbs.	399 lbs.	14 69	158 p. c.
4	40 bushels Green Cotton Seed and 200 pounds Stono Phosphate, not composted	9 00	695 lbs.	369 lbs.	13 14	146 p. c.
5	60 bushels Green Cotton Seed	9 00	701 lbs.	375 lbs.	13 50	150 p. c.
6	20 bushels Cotton Seed and 200 pounds Stono Phosphate, composted	6 12	711 lbs.	385 lbs.	16 98	277 p. c.
7	40 bushels Cotton Seed and 200 pounds Stono Phosphate and 20 loads leaves, composted.	9 50	680 lbs.	354 lbs.	11 74	123 p. c.

Bermuda Grass and Joint Grass.

EDITOR OF THE RURAL CAROLINIAN: In your February number, is an article on our "Native Grasses," by Mr. H. W. Ravenel, in which he mentions "Bermuda" and "Joint Grass" as being the same, in which, I think, he is much mistaken, for they are very different. The Bermuda is, I believe, an imported species. Its roots are long, strong, white, and nearly as strong as small cane roots; the growth above ground is very fine, of a whitish, green color; while the Joint Grass has reddish roots, so tender as to be readily eaten by stock;—the top much coarser than the Bermuda, with leaves alternate and opposite, while the Bermuda has two leaves at each joint. The Bermuda will give a beautiful sward in the poorest sandy soils, as witness the streets of Beaufort, which, I believe, is more than the Joint Grass will do; and it is also the most difficult grass to contend against in agriculture, as the roots are frequently so strong that it requires a strong man to pull them up, and so hard that stock of no kind will eat them. I believe the Bermuda is a variety of the Kentucky "Blue Grass," or "*Poa*."

The "Crowfoot" may be called an "early summer" grass, but it grows only in rather sandy soils, and, from the fact that it does not spring before June, is commonly known on our coast as "Crowfoot," or "June Grass." The seeds are like fine corn grist, and it is them that the doves live upon when they come with us in the winter.

R. C.

Inquiries and Answers.

A friend from Natchez, Miss., writes us as follows: "I have lost several lambs. They become stiff in the neck, which draws their head in an almost upright position; they lose all power of movement, yet when held up, suck as if they were perfectly well; they linger in that state several days; some are taken suddenly, others commence by getting stiff in the legs, and tottering a few yards, fall; they continue in this condition a day or two, when they lose all power of locomotion. Can you give me a remedy for my favorite animal?" We regret not being able to diagnose this disease, or to prescribe a remedy. We hope some of our readers or subscribers in the sheep growing sections of the North will, if in their power, answer the above inquiry.

——— In reply to a "Subscriber," Fort Motte, S. C., in regard to making Crab Grass hay, another "Subscriber," Madison, Ga., says: "Let him break his land at any time before the 1st of June. I do not know that ploughing twice would help it any. Cut it in the morning, spread it evenly, and in the afternoon bunch it up, and let it lie one or two days; then spread out the bunches; two or three hours before drawing in. This rule is for pleasant weather. Do not expect to raise crab grass where nothing else will grow as it requires good land."

——— J. C. F. We have repeatedly said in reply to similar questions, that we can not tell which is the best fertilizer. We have not tried them all, and if we had, the one found best for our land might not be best for yours. See "Experiments with Fertilizers in February number." 2. Corn meal may be an economical fertilizer where, as in some parts of the West, corn is worth but from ten to fifteen cents a bushel, but there, they do not need it.

——— Prof. C. V. Riley, St. Louis, Mo., says he has every reason to believe that, as predicted in his first Report, Cicadas (the so-called seventeen and thirteen years Locusts appeared in portions of this State, in 1872. Any of our readers, who may have observed them, will oblige him and promote the cause of Entomology, by communicating the facts either to us, or directly to him as above.

———Mrs. M. B. See notice of the Seed Catalogue of Peter Henderson & Co., in February number. Yes, Mr. Henderson is the author of "Gardening for Profit," and one of the best seedsmen and florists in the United States, or anywhere else. You can get both the seeds and the plants you mention from him.

———"Up-Country." Orchard-grass is very light and chaffy, and therefore requires a large quantity, by measure, for an acre. Two bushels is a very moderate seeding, and from two and a half to three bushels will be better, giving a thick stand and fine hay. Sparse seeding makes coarse hay.

———"Gardener." We know no better remedy for weeds in walks than salt scattered freely over them. Refuse salt from meat and fish barrels is just the thing to use, if you can get it.

———W. H. H., Chester, S. C. We can furnish Japan peas by the package. We do not know who has them for sale by the peck or bushel.

———P. F. C., and others, want Doura Corn for planting. Those who have the seed, should advertise it in the Rural Carolinian.

W. S. H. The remark to which you refer, was made by the Editor, and not by Col. Aiken. In regard to Minter's Cultivator, we can add nothing to what has already appeared in the RURAL CAROLINIAN in regard to it. We have one of the implements, but have not yet had an opportunity to try it in the cotton field. You need not adapt your rows to it. It is adjustable to any width of rows at which cotton is planted. Will some one give us the results of experience with it?

S. J. H., Tuscumbia, Ala. All specimens of plants received by us are duly noticed, provided they are accompanied by the proper request, and the name and address of the sender. We have received several without a word of explanation or inquiry accompanying them. In such cases, we take no notice of them.

General Notices and Acknowledgments.

Mr. Francis M. McMeekin, of Florida, has patented an improvement in ploughs, in which every farmer will feel an interest, since it is calculated to save money in the purchase of implements, and time and labor in repairs and adjustment. The improvement consists mainly in the standard, and in the adaptation of the mold board to it, in such a way as to be securely and firmly fastened with the greatest facility, and with the use of a single bolt, so that the plough can be changed in a few minutes from a turn-plough to a bull-tongue, a sweep, a subsoiler, or anything else required; the operation being so simple that any common field hand can perform it in the field. In short, it is a strictly universal plough, the same stock and the same standard serving for all kinds of ploughs, and it has the advantage over all others, we think, of greater simplicity and greater strength. To show how these ends are attained without a drawing, would be difficult, if not impossible, and we defer further description till we can illustrate it. When arrangements for the manufacture of these ploughs shall have been made, the public will, no doubt, be notified.

Col. W. H. Cannon, of St. Stephen's, S. C., taking a hint from the RURAL CAROLINIAN, in the matter of improving the cotton plant by the selection of seed, has succeeded in producing what he calls an "eight-lock cotton," which he proposes to name "Cannon's Prodigy." The specimens shown us were certainly wonderful in the quantity of lint exhibited in a bunch, and we can readily believe his statement that he has gathered of it (on first-rate land, of course) at the rate of 6,000 lbs. of seed cotton to the acre; but we find, on close inspection, that the eight locks, or, in some cases ten locks, come from twin bolls, (Siamese twins, perhaps,) and not from a single boll as Mr. Cannon seems to claim; but this does not effect at all the result. The cotton is there in a single bunch, and the habit of the plant can, no doubt, be fixed to the general production of these twin bolls, if the seed be carefully selected and the new variety kept up by high cultivation, without which any variety will deteriorate.

Briggs & Brother, Rochester, N. Y., are said to be the oldest in the business in that State, and the most extensive seed-growers in America. Their quarterly Catalogue is certainly the largest, most complete, and most expensively and elegantly

illustrated work of the kind which we have ever seen, issued in this or any other country. People who can not find in it everything they want, must be hard to please. You get the four numbers for 25 cents. The information it contains, aside from the lists of vegetable and flower seeds, bulbs, etc., is worth more than its cost to any one who cultivates a garden. According to our experience, Briggs & Brother do all they promise, and often a little more.

"The Annual Report of the Chief Signal Officer, for the year 1872," for which we are indebted to Gen. Alber J. Myer, signal officer, is a valuable and deeply interesting document, and gives an encouraging view of the operations of the Weather Bureau, showing that genuine progress is being made in meteorological science. The time is not distant, we fully believe, when the weather will be predicted in advance with almost absolute accuracy, and "probabilities" will become certainties. We hope the operations of the signal office will be extended by the establishment of additional stations.

Mr. Henry A. Dreer, 714 Chesnut street, Philadelphia, sends his handsome Descriptive Catalogues free, and his seeds, as we know by frequent trial, are always fresh and true to name. See his Catalogue for 1873, for lists of attractive novelties sent out this year. Of some of these we intend to give illustrated descriptions in future numbers. Mr. Dreer is well known to our readers, and needs no special recommendation from us to them.

Our good friend, P. J. Berckmans, of Fruitland Nurseries, Augusta, Ga., has again laid us under obligations by a very acceptable collection of plants, among which are some choice novelties. We can only express our sincere thanks, for Mr. Berckmans is too well known, and has a reputation too high and too well established to require our endorsement, or to be benefited by a "puff," were puffing in our "line," which it is not.

Peter Henderson's "Spring Catalogue of New, Rare and Beautiful Plants, for 1873," has been received. Its contents tempt us far more than those of the Seed Catalogues, and make us envious of those who can afford to invest largely in the floral treasures offered, as we hope many of our readers may be able to do. Address 35 Cortland street, New York.

The Catalogue of B. K. Bliss & Son is a standard publication, and has continued to grow in fulness and beauty with the growing business of the house till it now makes a volume of nearly two hundred pages, with hundreds of beautiful engravings and a large colored frontispiece. Its lists of seeds and plants are uncommonly extensive, and the novelties enumerated are very tempting. Price of Catalogue, 25 cents.

James Flemming, (successor to Henderson & Flemming,) 67 Nassau street, New York, sends out his excellent and trustworthy Seed Catalogue for 1873, with a beautiful chromo of a group of splendid portulaccas, for a frontispiece. Mr. Flemming has been a long time in the business, and has a reputation second to none for reliability and fair dealing. Send for a Catalogue.

Literature, Science and Home Interests.

LAURELLA.

II.

It was only an hour after mid-day, and yet Antonio had already been sitting full two hours on the bench in front of the Fishermen's Tavern. He must have been anxiously waiting for some one, for every few minutes he would jump up and go out into the sun to look up the two roads which parted right and left, led to the two little towns on the island. He did not altogether like the appearance of the weather, he said to the hostess of the little tavern. True it was clear enough, but the peculiar tint of the heavens and the sea was ominous.

It looked just so, he said, before the last great storm, when he had such difficulty in reaching land with the English family. "You must remember it," he added.

"No, I did not," replied the woman.

"Well, if the weather changes before night, you will remember me," said he.

"Have you many fine folks over at Sorrento?" she asked after a pause.

"They are only beginning to come. The season has been very dull thus far. Those who came to bathe came late."

"It was such a late spring! Have you not been making more than we here at Capri?"

"I should not have made enough to give me maccaroni twice a week," replied Antonio, "if I had depended wholly on the boat. Now and then a letter to carry to Naples, or a gentleman to row out fishing, that was all. But you know I have a rich old uncle, who owns more than one fine orange-grove. 'Tonino,' says he 'so long as I live you shall not want, and at my death you will find I have provided for you.' So, with God's help, I managed to get through the winter very comfortably."

"Has your uncle any children?"

"No, he has never been married. He lived long in foreign parts, where he laid aside many a good piastre. He is about to start a large fishery, and is going to put me in charge of it."

"Why, then you are a made man, Antonio."

The young boatman shrugged his shoulders.

"Every man has his own burden to carry," said he.

Again he went out and looked anxiously right and left, although he must have known that there was but one weather side.

"I will bring you another bottle," said the hostess. "Your uncle can afford to pay for it."

"Only one glass more. Your Capri wine is too fiery. My head is hot already."

"It does not heat the blood. You can drink as much as you like of it. And here comes my husband; you must sit a while and chat with him."

And, sure enough, there came the stalwart host of the little tavern, with his fish-net over his shoulder, and his red cap pulled down low over his curly head. He had been to carry some fish to the great lady whom the little Sorrento curate had gone to visit. When he saw the young boatman he waived him a welcome. Then, after throwing his net aside, he came and sat beside him on the bench. Just as the hostess appeared with a second bottle of genuine Capri, Laurella came down the road from Anacapri. She nodded modestly, and then stopped, apparently embarrassed.

Antonio sprang to his feet.

"I must go," said he; "this is a young girl from Sorrento who came over with the Signor Curato this morning. She must be home with her sick mother before night."

"Well, it's a long time yet till night," interposed the host. "She will have time to drink a glass of wine with us. Ho, wife, bring another glass!"

"I thank you, I do not care for any," said Laurella, and remained standing at a distance.

"Fill her glass, wife, fill her glass; she must drink with us!"

"Don't urge her," interposed Antonio, "She has a head of her own; a saint could not persuade her to do what she does not want to do." And taking a hasty leave, he ran down to his boat, loosened the painter, and stood waiting for Laurella, who nodded a good-by to the hostess, and followed with ill-concealed reluctance. She looked around as though she hoped to see some other passenger, but the strand was deserted. The fishermen were asleep, or were rowing about the shore with their rods and nets, a few women and children sat before the doors of the cottages either asleep or spinning, and such strangers as had come over to the island in the morning were waiting for the cool of the evening to return. She had little time to look about, for, before she could remonstrate, Antonio had taken her in his arms, and carried her through the shallow water to the boat, as though she had been a child. Then he leaped in after her, and with a stroke or two of his oars they were in the open bay.

She seated herself in the bow of the boat, and turned partially from him so that he could see only her profile. Her face wore a more determined look than usual—the lips were firmly closed, and around her delicate nostrils there played a defiant expression,

that harmonized admirably with the almost wild gleam of her eyes. After they had gone on for some time in silence, feeling the sun uncomfortably warm, she undid her bundle, threw the handkerchief over her head, and began to make her dinner of the bread she had brought from home, for at Capri she had eaten nothing.

This was soon too much for Antonio. He brought out a couple of the oranges with which his basket had been filled in the morning, and said:

"Here, eat these with your bread, Laurella; you needn't think I saved them for you. They fell out of the baskets, and I found them when I returned to the boat."

"Eat them yourself; dry bread will do very well for me."

"They will refresh you after your long walk in the hot sun."

"I drank a glass of water just before I came down to the shore—that refreshed me enough."

"As you please," said he; and he threw the oranges into one of the baskets.

Again they were silent. The bay was as smooth as a mirror, not even a ripple was heard under the prow; even the white seabirds, that nest among the rocks along the shore, flew noiselessly to and fro in search of prey.

"You might take the oranges home to your mother," recommenced Antonio.

"We have plenty, and when they are gone I can buy more."

"Take them to her with my compliments."

"She does not know you."

"But you can tell her who I am."

"I do not know you either."

This was not the first time she had disclaimed acquaintance with him. About a year previously, just after the Neapolitan painter came to Sorrento, Antonio chanced one Sunday to be playing boccia with some friends, in a little square near the principal street. During the game Laurella passed, as did the Neapolitan, who, struck by her beauty, stopped to gaze after her, unmindful that he was standing in the way of the players. Suddenly there came a swift ball against his ankles, as a reminder that he should choose some other spot for his reveries. He looked round as though he expected an apology; but the stalwart young boatmen, who had thrown the ball, fixed his eyes upon him with such a defiant mein, that the stranger deemed it prudent to go his way and avoid an altercation. Still the incident was made the subject of remark, especially at the time the painter pressed his suit to Laurella. "I do not know him," said she, indignantly to the painter, when he asked her if she refused him on account of the discourteous boatman. And yet the gossip to which the incident gave rise had reached her ears, and she had known Antonio well enough when she had met him.

And now they sat together in the boat like the bitterest, of enemies, while both their hearts beat furiously. Antonio's usually good-natured face was scarlet; he rowed so wildly as to throw the water into the boat, and every now and then his lips moved as though he was muttering angry words. Laurella pretended not to notice him, and, putting on her most unconscious look, she leaned over the side of the boat and let the water ripple between her fingers. Then she took the handkerchief off her head and arranged her hair, as though she had been alone. She could not control her eyebrows, however, and it was in vain that she tried to cool her burning cheeks with her wet hands.

They were now well out in the open sea. The island was far behind them, and the coast ahead of them lay equally distant in the hot haze. Not a sail was to be seen near or far; not even a passing gull was there to break the monotony of the scene. A thought seemed to strike Antonio, and he suddenly looked anxiously around. His face became pale, and he let go of his oars. Laurella looked toward him involuntarily—fearless, yet attentive.

"I must put an end to this," he began, breaking silence at last; "it has already lasted too long. I wonder it has not killed me before now. You do not know me, you say? Not know me! And how long is it now that you have seen me pass you like a madman, my heart full of what I had to say to you? If you do not know me, why do you always turn your back and frown when we meet?"

"What have I had to say to you?" she asked. "True, I have seen that you put yourself in my way; but I don't mean to give people any thing to gossip about, if I can help it. I do not want you for a husband—no, neither you nor any one else!"

"Nor any one else? You will not always say so. You say so now because you refused that painter. Bah! you were only a child then. The time will come when you will feel lonesome enough; then you will be glad to accept the first one who comes."

"No one knows what changes even a day may make. It may be that I shall change my mind. Who knows? But whether I do or do not, what is it to you?"

"What is it to me?" he cried, and sprang to his feet so violently that he came near capsizing the boat. "What is it to me, you ask, when you know very well how I feel toward you?"

"Have I ever promised myself to you? Am I to blame for your folly? What right have you to me?"

"Oh, my right is not written down anywhere, I grant you," he cried; "but for all that, I know that I have the same right to you that I shall have to heaven, if I live an honest Christian life. Do you think I will see you

go to the altar with another, and then afterward see myself the sport of all the girls and fellows in Sorrento?"

"You can do what you please, but you need not think I can be frightened by your threats."

"You will not say so long," said he, and his whole frame trembled with excitement. "I am no milksop to allow my whole life to be wrecked by a stubborn girl like you. Do you know that I have you now in my power?"

She started slightly at the thought, but, quickly recovering her self-possession, she fixed her eyes on him defiantly.

"Very well, you can kill me if you will," said she, calmly.

"I do nothing by halves," said he, in a low, intense tone. "There is room for us both in the sea. I must, I must, my child!" He spoke in a dreamy, compassionate tone. "We must both go down together, both at once, and now too!" he cried, frantically, and seized her in his arms; but he instantly drew back his right hand. It bled profusely from a wound inflicted by her teeth.

"Ha, am I in your power? You can do with me as you please, can you?" she cried, and, pushing him energetically away, she plunged into the water and disappeared beneath the surface. She rose, however, almost immediately. Her skirts clung closely to her symmetric figure, and her long hair, loosened by the water, hung heavily about her shoulders. As she came up, without uttering a word, she began to swim steadily toward the shore. Fright seemed for a moment to have robbed him of his senses. He stood upon the boat and gazed at the swimming girl like one petrified with astonishment; then, recovering self-command, he seized his oars, and, in spite of his wound, which bled profusely, he rowed vigorously after her. In a moment, rapidly as she swam, he was at her side.

"For Heaven's sake," he cried, "get into the boat!—I was mad—God only knows what came over me—I knew not what I did! I do not even ask you to forgive me: I ask only that you get into the boat, and do not expose your life!"

She swam on as though she did not hear him.

"You can never swim to the shore; it is full two miles. Think of your mother! If you should be drowned, she would die of grief."

She measured the distance from the coast with her eye, and then, without making any reply, she swam up to the boat and caught hold of its side. As he rose to aid her, the tilt her weight gave to the boat, caused his jacket, which was lying on one of the thwarts, to slide into the water. Before he could render her any assistance, she was in her former place. Seeing that she was safe, he quickly took to his oars again, while she began to wring out her dripping clothes and hair. As her eyes fell on the bottom of the boat, and saw it covered with blood, she glanced quickly at his hand, which held the oar as though it had been unhurt. "Here, take this," said she, holding out her handkerchief. He shook his head, and went on rowing. She hesitated a moment, then rose and bound the handkerchief carefully around the wounded hand. This done, she took one of the oars, and, in spite of his endeavors to prevent her, she seated herself on the thwart behind him, and began to row with steady and vigorous strokes.

They were both pale and silent.

As they approached the shore, they met numerous fishermen coming out to set their nets for the night. They shouted to Antonio, and bantered Laurella, but neither of them made any reply, or ceased for a moment to ply their oars.

The sun still stood high over Procida when they reached the mouth of the creek. Laurella shook out her skirts—now nearly dry—and sprang to the shore. The old woman who saw them start in the morning was still spinning on her terrace.

"What's the matter with your hand, Tonino?" she cried out. "Santa Maria! the boat is full of blood!"

"It is nothing, Comare," answered Antonio. "I scratched my hand on a nail—that's all. It will be well in a day or two. It bled freely, and that makes it look worse than it really is."

"I will come and dress it with some of my herbs, Comparello—yes, yes; I must dress it for you!"

"No; it's not worth while, Comare—I thank you. The bandage that's on it now will do very well. It will soon be well—my flesh heals so quickly. I often get these scratches, you know."

"Addio!" said Laurella, and took the path that winds up the cliffs.

"Buono sera!" replied Antonio, without looking up. Then, gathering up his oars and baskets, he slowly ascended the stone steps that led to his hut.

He was alone in the two rooms, and began to walk to and fro in a very uneasy frame of mind. The breeze, as it passed through the open windows, which could be closed only with wooden blinds, was somewhat more refreshing than in the sun on the open sea. He stood long before a little picture of the Virgin, and gazed thoughtfully at the halo around her head, made of stars cut out of silver paper; but he felt no inclination to pray. Now that he had lost, irretrievably lost, what he had so ardently hoped for, what was there left worth the asking?

And the day, it seemed would never end. He so longed for night to come! He was fatigued, and more exhausted from the loss of blood than he was willing to acknowledge

even to himself. His hand pained him severely; so he sat down and loosened the handkerchief. It was badly swollen, and as soon as the bandage was removed, it began again to bleed. Having, to cool it, immersed it for some time in water, and carefully washed it, he distinctly saw the marks of Laurella's teeth.

"She was right," he muttered; "I was a brute, and deserved no better. To-morrow I will send Giuseppe with her handkerchief; me she shall never see again!"

After he had carefully washed the blood out of the handkerchief, and hung it in the sun to dry, he bound up his hand as well as he could, and threw himself on his bed.

He was not long in falling into a doze; but the bright moonlight, and the pain of his wound, soon awakened him. He had just risen to immerse his hand again in water, when there came a rap at his door.

"Who's there?" he asked, and went to receive his visitor. He opened the door, and Laurella stood before him.

She came in without saying a word, and, almost without looking up, took off the handkerchief she wore over her head, and set a little basket she carried on the table. There was a certain nervousness in her movements that betrayed an inward struggle in spite of her endeavors to appear composed.

"You have come for your handkerchief?" began Antonio; "if you had waited till to-morrow morning, I would have saved you the trouble by sending Giuseppe with it."

"No, it is not for my handkerchief that I came," she answered quickly. "I have been up among the hills for herbs to stop the blood. See!" and she raised the cover of her basket.

"It was not worth while to take so much trouble," he said, in a kindly tone. "My hand is already much better; but if it were worse, it would be no more than I deserve. Why do you come to me at such an hour? If any one should see you!—you know how ready people are to talk."

"Let them talk—what do I care?" said she, impatiently. "But show me your hand, and let me dress the wound with these herbs."

"I tell you it is quite unnecessary."

"Well, let me see it, that I may judge for myself." Despite his remonstrances, she took his hand and removed the old linen bandage he had awkwardly wound around it. "Good Heavens! is it possible?" she cried, with a shudder, when she saw the condition it was in.

"It is swollen some, I know," said he calmly; "but the swelling will go down in a day or two."

She shook her head incredulously.

"You will not be able to do any thing for a week, at least."

"A week—well, no matter!"

She brought a basin of water, and washed his hand carefully—an operation to which he passively submitted. This done, she covered it with fresh leaves from her basket, and then bound it up with some strips of linen she had also brought with her.

"Thank you," said he, when she had finished. "And now, if you would do me one more favor, not only forgive me for acting so like a madman to-day, but forget all I did and said. What possessed me is more than I can tell. You certainly have never given me cause to act so like a maniac. I will never say any thing to you again that will displease you, I promise you—much less do any thing to displease you."

"It is I who should beg pardon of you," said she; "I should have answered you very differently, and not have angered you with my disagreeable ways. And then to have bitten you so!"

"You did it in self-defence. It was high time to bring me to my senses. Besides, the wound is not serious. Let us say no more about it. You have taught me a wholesome lesson, and I thank you for it. And now I won't keep you any longer. There—there is your handkerchief; you can take it with you."

He handed it to her. Still, she did not go.

"I—I have been the cause of your losing your jacket," said she, after a pause. "I know that all the money for the oranges was in it. I did not think of that at the time. I cannot replace the money now—we have not so much at home, and, if we had, it would be mother's; but I have this silver cross, that the painter left on the table when he came to see us the last time. I have hardly looked at it since then, and do not care to keep it any longer in my box. If you were to sell it—it must be worth a few piastres—you would have part of the money back; the rest I could earn by spinning at night, when mother is asleep."

"If your cross is not sold till I sell it, then it will never be sold," said he.

"You must take it," she replied, laying it on the table. "Who knows how long you will be laid up with your hand? There it lies, and I don't want to ever see it again."

"If you leave it, I'll throw it into the sea."

"I do not offer you a present; I only give you a part of what is your due."

"My due? You owe me nothing; I have no claim on you whatever; and in future, when we meet, do me the favor not to look my way. You would only remind me of what has passed between us to-day, and I would forget it. And now, good-night—yes, and—for the last time!"

He put the handkerchief in her basket, and the cross with it. As he looked up, he was greatly alarmed. Big tears chased one another down her cheeks, and she made no effort to restrain them.

"Maria Santissima! are you ill?" he cried. "You tremble from head to foot!"

"Ready for a Bite."

"It is nothing; I will go home," she replied, and turned towards the door; but, unable to control herself longer, she leaned her head against the wall, and sobbed bitterly. Then, suddenly, before he in his amazement could decide what to do or say, she turned, and threw herself into his arms.

"Oh, I cannot endure it!" she cried. "I cannot bear to go from you in this way, with all this load upon my conscience! If it is true that you love me so much, that you can love me still, after what I have done, then do not drive me from you, but take me and do with me as you will."

He held her for a few moments in his arms, speechless with ecstasy.

"Love you still!" he cried, finally. "Do you think the last drop of my heart's blood has run out with this little wound? No, no! my heart throbs at this moment as it never throbbed before! But, if you say you will be mine only to try me, or because you pity me, then go, and I will forget this too. No, I would not allow you to sacrifice yourself, no matter how much I suffered."

"Sacrifice myself!" she cried, looking up from his shoulder into his face with her tearful eyes. "It is no sacrifice, for—for I love you, Tonino!"

"Love me!" exclaimed Antonio, wild with joy.

"And," she continued, "if I have always been so disagreeable, it was because I feared I should love you, and fought against it. But now I will be very different. As for passing you in the street without looking at you, I never could have done that; and, lest you may fear, when I am gone, that this is all a dream, you shall be able to say to yourself, 'She kissed me,' and Laurella kisses no man she would not have for her husband."

A moment later Laurella was on her way home, and Antonio stood alone, bewildered but joyous, in his little hut.

[*From the German of Paul Heyse.*

"DUM VIVIMUS VIVAMUS."

In the youth of the heart, e'er the glorious ray
That was born of life's morning has faded away,
While the light lingers yet in the eyes that are dear,
And the voices we love, still remain with us here,
While the wine is yet red, and the stars are still bright,
And the winds and the waves bring us music by night,
While the warm blood leaps up when the forests resound
With the tread of the horse, and the bay of the hound—
Oh! ever and alway, so long as we may—
As we journey through life; let us live by the way.

Let us live! In the power to enjoy that is given,
The earnest on earth of the glory in Heaven,
In the courage that ever in mirth or in sorrow,
Has strength for each day, and a hope for each morrow,
With smiles for the future, through tears for the past,
And joy in the hours that steal from us so fast—
For the friends, whose brave spirits still hover around us—
For the love, whose bright, blooming tendrils have bound us,
'Though cloud, or 'though sunshine, encompass the day,
As we journey through life, let us live by the way.

When the world has grown old, and the night stars at last,
That rose in the future, have set in the past—
Save that brightest of all, which is guiding us ever,
To the beautiful country beyond the dark river;
When the eyes have grown dim, and the locks have grown gray,
And we gather no more to the feast or the fray—
When we pause at the end, and look thoughtfully back
Through the change and the chance of the long, weary track,
It will cheer the old heart to be able to say,
As we've journeyed through life, we have lived by the way.

J. K. L., *in Littell's Living Age.*

A GLANCE AT THE FEB. NUMBER.

[Receiving this too late for insertion in its more appropriate department, we make room for it here. Our critical correspondent's pen is rather sharp, at times, but we trust our contributors are not uncomfortably thin-skinned.—ED.]

"*Notes on Planting*"—like some bank notes, have many promises that will never be paid. "Low Middling" has set his pegs rather high for the present condition of affairs. The fencing of crops may be an "unmitigated nuisance," but it is one we will have to endure for a long time. We may as well be content with the old worm-fence, and make the best of it. Sambo is not a land proprietor, and his "penchant" for stock-raising grows stronger every year. Pictures are very pretty, but it is not so easy to erect the structures. Our

farm buildings are very illy constructed—not adapted to the new order of things—and every farmer should study to improve and adapt himself to his surroundings.

"*Experiments with Fertilizers.*"—Dr. Smith has given us some very interesting experiments—but our experience is, that experiments made upon plats of one-sixtieth of an acre, or a few rows, are very unsatisfactory.

"*Underdraining for Profit and health.*"—It will be a long time before we can risk such experiments on a farm. It may do on truck patches and market gardens.

"*Reclaiming and Preserving Clay Soils.*"—A very expensive operation, and reminds us of a colloquy between an enthusiastic beginner and an old farmer. A had been showing B, on paper, how beautifully he would work out his problems, and with quite a triumphant air said, now don't you see it? Yes, A, I see the figures, but you'll find it, my boy, much harder to work it out of the ground than on paper. We find it hard enough to get work done after any fashion, and we always suspect these model plantations are on paper.

"*Applied Chemistry and Mineralogy.*"—We used to have great hopes of it. We began with Liebig, and have followed all the great chemists, and have changed our opinion so often that we hardly know where we are:

"When doctors disagree,
Disciples then are free."

"*The State Agricultural Society and its Late Fair.*"—A palpable hit. There is no doubt of the fact, that nearly all the Fairs North, South, East and West, have failed to do the good expected of them, and mainly owing to the side shows, horse-racing, etc., but it should be remembered that Fairs cannot be conducted without money; the farmers, manufacturers and mechanics will not foot the bill; they will not *turn out*, and a crowd can only be got together by a raree show. The great difficulty is the sparseness of our population and our poverty. It is difficult to draw a moral population together in crowds large enough to make an exhibition *pay*, and the expense is no ordinary item. Our farmers should go with their own wagons and teams, and camp out. It would then become a social organization every year, growing stronger and more useful.

"*The Patrons of Husbandry.*"—There can be no doubt but much good may be effected by this organization, if properly conducted. Its social feature is a very important one, and if the Order will be careful in the admission of proper persons, and maintain the standard upreared, it may become a power in the land for good. All depends upon its *material*. "*Stick a pin there.*"

"*Our Native Grasses.*"—We are glad to see this subject taken up by so competent a gentleman as Mr. Ravenel—not only competent, but reliable in the old time meaning of the word.

By the way, is there not another species of joint grass, of a paler color, stem terminated by *two* spikes of flowers which grows on our branches?

"*Seed Corn.*"—If a barrel full of gourd seed shell out a half peck more than a barrel of full big cob, *ceteris paribus*, isn't the gourd-seed the better corn. We knew a sharp fellow once to sell several loads of corn in the ear to a tavern keeper of our acquaintance. In sorting his corn, he always threw his gourd-seed ears to one side, and made his last load of gourd-seed, out of which he measured the barrel. After settlement, the tavern keeper began to think that his barrel somehow measured out heavier than usual, and he selected a barrel of the big cob, when, much to his surprise, it did not shell out by nearly a peck as much corn. We have been a gourd-seed seed man ever since.

"*What a Lady Thinks of it.*"—Good—but we don't fancy lady farmers so much—rather see them conspicuous in other branches of domestic economy.

"*How to Destroy Nut Grass.*—" Mr. Stokes thinks that he has put the thing in a nut shell: we are not so sure of it. We can show a stable lot—which had once been a garden, but was abandoned on account of nut grass. It was rooted up by drove hogs, and tramped by horses and stock for years, not a spear of nut grass visible; but when put into cultivation again it came up blooming.

By the way, did Mr. Stokes ever see a *seed* of nut grass? Has it seed and yet does not propagate by seed? We stand unconverted.

"*The best Farm Grist Mill.*"— All the patents which have come under our notice to be run by gin gearing are humbugs. Little Giants and Cob Crushers are worse, and fit for nothing but grinding bark.

"*Literature, Science and Home Interest.*—For the sake of the gentler sex, this department should be made as interesting and improving as possible.

We have introduced Agricultural and Household Economy literature into our Grange and anticipate many pleasant and profitable moments from it. It will give us something to think about and talk about. There is nothing like mental friction to sharpen ones wits or social literary intercourse to bring out the humanities. ***

OLD CHARLESTON.

A FRAGMENT FROM AN UNPUBLISHED POEM.

I'm off from work for holiday,
A day or two, or more, to stray
Through Blackville, Bamberg and Midway,
To where the sea-green waters play
Within heroic Charleston's Bay.
Ah! well I ken the direful day,
Those waters shook with martial fray;
When Sumter, faithful sentinel,
Who kept those channel gates so well,
Beneath stern Gilmore's shot and shell,
Like Saragossa, grandly fell!
Still, still before that fire of hell,
Tho' smoke and flame around it curl'd,
And fierce projectiles fast were hurl'd,
That glorious banner was not furl'd,
But waved defiance to the world,
To point where Carolina gave—
Her *prestige* and her right to save—
The best blood of her dauntless brave,
And valor found his noblest grave!

Time was, that banner led a mighty host
Of free-born Southmen, stalwart, leal and brave;
And proudly flaunted where the fight raged most,
Or swiftly sped across th' Atlantic wave,
Or sadly droop'd above the war-worn soldier's grave.

'Tis past: no more on plain or billow's crest
The three-barred banner floats in martial pride;
But shrined in each Confederate's joyless breast,
Its tattered, blood-stained folds are hugged beside
Their memory, who 'neath those glorious folds have died!

'Twas thus with Erin, Poland, Hungary,
And other ill-starred lands beyond the brine,
Where might makes right: thy sons, O Liberty!
Thro' God's most wise, inscrutable design,
Are laid a holocaust upon thy dreadful shrine!

Grim fortress! thou hast writ thy name,
In letters luminous and bold,
On Hist'ry's haughty scroll of fame!
And after-years shall oft unfold
Some story of the vengeful game,
That swept thy battlements with fire,—
The horrid avalanche of flame
That 'whelmed thee with destruction dire!

But Charleston stands: in future time,
When Clio doth her pen inspire,
And Calliope writes her rhymes,
Melpomene shall strike her lyre,
And chaunt the thund'rous battle song
That filled old Charleston's sons with ire,
And rolled in wrathful notes along
From roof to roof, from spire to spire,
While o'er her war-swept homes there hung
A lurid canopy of fire!

Old Charleston stands: my song is sung;
But from this theme I'd not retire,
Till from her foemen had been wrung,
The justice that her deeds require.
The death knell of her past is rung;
She rises from her ashes higher—
Behind her bloody garments flung—
A Phœnix from the funeral pyre,
While all her gallent sons among,
Is heard the oft-expressed desire,
That strife and hate may find surcease
In paths of industry and peace.

The fife is hush'd; the rolling drum
No more her crowded streets alarms;
And noble labor's noisy hum
All fears of woe and want disarms,
While hammer, trowel, saw and plane
Bespeak kind plenty's prosp'rous reign.
The plough-share supersedes the sword,
To hoe and spade the rifle yields,
And all her granaries are stored
With fruitage of her bounteous fields.
The patient worker's tasks prolong
'Neath Ceres' and Pomona's smile;
And curious jest and merry song
The weary hours of toil beguile,
While, all those gentle slopes above,
There broods an atmosphere of love.

And commerce spreads her fleecy sails
Aloft to woo the fresh'ning breeze;
What recks she of Atlantic gales,
Or perils of the stormy seas?
To her the ocean is a home,
Her sons are cradled on the deep;
O'er pathless wastes she loves to roam—
Her steadfast, tireless way to keep.

To northern city, orient town,
Her ample freights she quickly yields,
And many ports of old renown
Welcome the produce of our fields—
Our yellow pine and naval stores,
Our cotton bales and phosphate ores.
To lands where Famine gaunt and pale
Stalks in the plenitude of woe,
Or pestilence his sombre veil
O'er manse and cottage-roof doth throw—
Where e'er a wail of deep distress,
In crowded mart or wilderness
Is heard, such hapless place to bless,
Kind commerce flaps her mighty wing,
Intent with generous zeal to bring
Relief to human suffering.

Anon she lifts her pennons high,
When seas are smooth and winds benign,
To speed to austral lands that lie
Along the equatorial line.
Where summer holds perpetual reign
O'er verdant hill and fertile plain.
And tropic isles her presence greet
With Flora's off'rings rich and rare;
Pomona too her banquet sweet
Spreads in the balmy southern air,
And fields of coffee, fruit and cane
Bid commerce to return again.

And war is o'er. Sweet peace doth smile
On wooded dell and busy mart:
And field and bay and palm-crowned isle,
And every weary, anxious heart
Rest in her loving arms the while.

W. Fletcher Holmes, M. D.

Barnwell, S. C., February, 1873.

SPRING FLOWERS.

Spring flowers differ from the flowers of Summer and Fall, in their greater delicacy of color and fragrance. It is very pleasant to observe the modest, unassuming display of the many varieties. Beginning with the Violet, we name a few of the earliest to show themselves. What flower can compete in attractiveness, or is calculated to win our favor more readily, than the Violet, with its unpretending sweets? Trample it, and in her destruction she will overwhelm you with fragrance. The modest Daisy, the bright Columbine and retiring For-get-me-not, claim their full share of admiration. We must not, however, pass the lovely Hyacinth, Jonquil, nor the delicate Snow-drop. And later we find the Tulip in her glory, and the Narcissus in her magnificence, all attractive and desirable.

The flower garden would not be complete without that Queen of flowers, the Rose, and how infinite the variety, of every conceivable shade, yet all distinct. The "Cloth of Gold" and "Glory of France," are two of the most splendid varieties known. The "Damascena" of Northern India, and "Moschata" of Persia, afford the true "Altar of Roses."

The wild flowers of the woods and fields claim their place also, as they make themselves visible. Here we find the Flag, Wild Violet, English Daisy, Jasmine, Blue Bell, Mimosa, and Catchfly; these are to be sought, and will reward in their peculiar beautiful forms and shading, each, willing to take the trouble of finding. The Lily tribe in their beauty and magnificence are also entitled to a showing; some of the varieties have recently sold for fabulous prices. Fall flowers are much more hardy and abound in rich, high coloring; few of them are fragrant, but they compensate by their grand, showy appearance. Where will you find a more glorious flower than the Dahlia, Fuscia, Zima and others of this class. For attractive grandeur, take the "Theria Japonica," China Aster, and many species of the Cactus, especially the Cactus Grandiflora, and you have "grand flowers" in reality.

In such as these we do not look for fragrance. The pleasure afforded to the eye is sufficient. Who is not fond of flowers? Such a man or woman must be devoid of taste, sympathy and feeling, wanting in a proper appreciation of God's gifts. We say cultivate a taste for flowers. Spring Flowers, Summer Flowers, Fall Flowers—all admonish us, we are here only for a brief season. Let us enjoy them while we may. J. I. W.

ON MARRIAGE—TO YOUNG MEN.

The true girl has to be sought for. She does not parade herself as show goods. She is not fashionable. Generally, she is not rich. But, oh! what a heart she has when you find her! so large, and pure, and womanly. When you see it you wonder if those showy things outside were woman. If you gain her love, your two thousand are millions. She'll not ask you for a carriage or a first-class house. She'll wear simple dresses, and turn them when necessary, with no vulgar magnificat to frown upon her economy. She'll keep every-

thing neat and nice in your sky parlor, and give you such a welcome when you come home that you'll think your parlor higher than ever. She'll entertain true friends on a dollar, and astonish you with the new thought how little happiness depends on money. She'll make you love home, (if you don't, you're a brute,) and teach you how to pity, while you scorn a poor, fashionable society that thinks itself rich, and vainly tries to think itself happy.

Now, do not, I pray you, say any more, "I cannot afford to marry." Go, find the true woman, and you can. Throw away that cigar, burn up that switch cane, be sensible yourself, and seek your wife in a sensible way.

WHERE THE SUN DOES NOT SET.

A scene witnessed by some travelers in the North of Norway, from a cliff one thousand feet above the sea, is thus described:

"The ocean stretched away in silent vastness at our feet; the sound of waves scarcely reached our airy lookout; away in the North the huge old sun swung low along the horizon, like the slow beat of the pendulum in the tall clock of our grandfather's parlor corner. We all stood silent, looking at our watches. When both hands came together at twelve, midnight, the full round orb hung triumphantly above the waves, a bridge of gold running due North spanning the water between us and him. There he shone in silent majesty, which knew no setting. We involuntarily took off our hats; no word was said. Combine, if you can, the most brilliant sunrise and sunset you ever saw, and the beauties will pale before the gorgeous coloring which now lit up ocean, heaven and mountain. In half an hour the sun had swung up perceptibly on his beat, the colors changed to those of morning, a fresh breeze rippled over the flood, one songster after another piped up in the grove behind us—we had slid into another day."

LITERARY NOTES.

Scribner's Monthly announces a series of articles by Mr. Edward King, entiled, "The Great South," and intended to give graphic and truthful pictures of the Life, Conditions and Resources of the Southern States. They will be brilliantly illustrated, and will be written with no other object than that of representing, by pen and pencil, one of the most interesting, fruitful and picturesque regions of our common country. While they will aim to convey reliable information on all the social, industrial and commercial topics suggested by a personal survey, they will be written in the graphic style, and with the quick insight into character and ready appropriation of incident, which have already given to Mr. King the title of "a born Special Correspondent." "Arthur Bonnicastle" grows more and more attractive as it progresses. A new story, by Saxe Holm, will be commenced in the April number. [Scribner & Co., New York; $4 a year.]

The Charleston Medical Journal, we are pleased to learn, is to be revived, and will be issued again on the 1st of April, under the editorial management of Drs. F. Peyre Porcher and R. A. Kinloch. These distinguished gentlemen undertake the work as a labor of love, and members of the Medical profession in this State and the South generally will do both themselves and the publishers an injustice, if they fail to give the work their hearty support.

The March number of the *Atlantic Monthly* is one of the best ever issued, which is saying a great deal for it. "The Quarrel between Jefferson and Hamilton," by James Parton; "Robert Dale Owen, at New Lanark;" "Life Under Glass," and the continuation of "A Chance Acquaintance," W. D. Howells' charming new story, are worthy of special mention. The *Atlantic* may occasionally displease some of its readers, but it seldom disappoints. [Jas. R. Osgood & Co., Boston; $4 a year.]

The February number of the *Eclectic Magazine* has the opening chapters of a new story, by the author of "Patty," entitled, "Too Soon," which promises to be an exceedingly attractive work. "The Royal Favorites of France," "Goethe," and "Middlemarch," are papers of striking interest. The *Eclectic* is never dull, and is edited with good taste and judgment. [E. R. Pelton, New York; $5 a year.]

A faithful record of twelve months' successful plantation life in the Island of San Domingo, will be published in a few days by G. W. Carleton & Co., under the title of "Life in Santo Domingo," by an actual settler.

For our Young Folks.

A BIRD THAT WALKS ON THE WATER.

"Come Percy, let me show you a bird that walks on the water," said Aunt Helen.

She spoke to a boy who sat pouting on the carpet because his mother would not let him go into the garden while it was raining. Little boys are very unreasonable sometimes. Percy looked up, with a half-provoked, half surprised expression on his face.

"You're are only fooling me, Aunt Helen."

"Come and see."

"Birds can't walk on the water."

"Here's the picture. Come and see for yourself."

Percy got up slowly and came to where his aunt sat with an open book in her hand.

"There, didn't I tell you so?" said Aunt Helen, pointing to the picture.

"Ho! Pshaw! He isn't walking on the water!" exclaimed Percy. "You can't fool me?

"What is he walking on then?" asked Aunt Helen.

"Why, on great broad leaves."

"Well, that's curious, and quite a new thing under the sun. Don't you think so, Percy?"

"Why, yes. And just look what long, slender toes the fellow has; just like bits of wire. What is he doing away off in the middle of a pond, or lake?"

"After his dinner," replied Aunt Helen.

"I wouldn't give much for all he'll get out there," said Percy, with a laugh that smoothed the pouting wrinkles from his face.

"He'll take care of that. Birds and beasts never go on what we call fool's errands. They always do the right thing, at the right time, in the right place. This bird is called the Jacana, and is to be found in South America, and also in some parts of Africa, Asia and Australia."

The Jacanas are remarkable for the extraordinary length of their toes, which are so long and so slender that they seem to have been drawn out like wire, and to hinder the progress of their owner.

God gives them, when born, just so much intelligence, and never any more—to each animal the particular kind of intelligence it needs in order that it may get food and escape from its enemies. They have no schools in which to instruct the younger ones; for the children, very soon after they are born, know, without the help of books or lessons, as much as their parents."

"I never thought of that," said Percy. "But I might have known. The chickens, and pigs, and cows, and horses don't have any schools, and yet, all the young ones, when they are grown, have as much sense as the big ones. What did you call this kind of knowledge, aunty?

"Instinct."

"Oh, yes. I'll remember.—*Children's Hour.*

WHAT IS LIFE?

[CONTRIBUTED BY A LITTLE SOUTH CAROLINA BOY, TWELVE YEARS OLD.]

What is Life? Oh! gentle breeze,
Is it sighing 'mong the trees?
Is it sweeping far away?
Is it rioting all the day?

What is life? Oh! answer me,
Wilt thou wide and rolling sea?
Is it sweeping o'er the sand?
Or rolling high up, to the land?

What is Life? Oh! little bird,
Was it ever in the woodland heard?
Is it chirping all day long,
With ever new and welcome song?

What is Life? Oh! lake, so fair,
Is it to sleep 'mong the hills out there?
Is it in the river that leaves thy side?
And seeks afar the ocean wide?

What is Life? Oh! squirrel gay,
Is it on the tree-tops to play?
Is it on high to build a nest?
Wherever thou may think it best?

What is life? Oh! insect small,
Thou shalt tell me after all.
Is it creeping all the day?
To pursue thy little way?

What is Life? Oh! mortal tell?
So that I may bear it well!
Is it in the works we do?
Numbered many or but few?

Wadmalaw. HARRY.

THE STORY OF SOME HOT WATER.

About two hundred years ago, a man, bearing the title of the Marquis of Worcester, was sitting, on a cold night, in a small mean room, before a blazing fire. This was in Ireland, and the man was a prisoner. A kettle of boiling water was on the fire, and he sat watching the steam, as it lifted the lid of the kettle and rushed out of the nose.

He thought of the power of the steam, and wondered what would be the effect if he were to fasten down the lid and stop up the nose. He concluded that the effect would be to burst the kettle. "How much power, then," thought he, "there must be in steam!"

As soon as he was let out of prison, he tried an experiment. "I have taken," he writes, "a cannon, and filled it three quarters full of water, stopping firmly up both the touch-hole and the mouth, and, having made a good fire under it, within twenty-four hours it burst and made a great crack." After this, the Marquis contrived a rude machine, which, by the power of steam, drove up water to the height of forty feet.

About one hundred years after this, a little boy, whose name was James Watt, and who lived in Scotland, sat one day looking at a kettle of boiling water, and holding a spoon before the steam that rushed out of the nose.

His aunt thought he was idle, and said, "Is it not a shame for you to waste your time so?" But James was not idle; he was thinking of the power of the steam in moving the spoon.

James grew to be a good and great man, and contrived those wonderful improvements in the steam-engine which have made it so useful in our day.

What will not the steam-engine do? It propels, it elevates, it lowers, it pumps, it drains, it pulls, it drives, it blasts, it digs, it cuts, it saws, it planes, it bores, it blows, it forges, it hammers, it files, it polishes, it rivets, it cards, it spins, it winds, it weaves, it coins, it prints; and it does more things than I can think of.

If it could speak, it might say:

"I blow the bellows, I forge the steel;
I manage the mill and the mint;
I hammer the ore, and turn the wheel,
And the news that you read I print."

In the year 1807, Robert Fulton, an American, put the first steamboat on the Hudson River, and in 1829 a locomotive steam-carriage went over a railroad in England.

And this is the story of some hot water. From so small a beginning as the steam of a tea-kettle resulted the steam-engine, the steamboat, and the locomotive engine, by which the trains of cars are moved with such speed on our railroads.

Learn what the power of thought will do. How many men had looked at kettles of boil-water, but how few thought of the force of the steam, and the good uses to which it might be turned!

A little girl was one day reading the history of England with her governess, and coming to the statement that Henry I. never laughed after the death of his son, looked up and said, "What did he do when he was tickled?"

"A penny for your thoughts, miss," said a gentleman to a pert beauty. "They are not worth a farthing, sir," she replied; "I was thinking of you."

A Virginia paper describes a fence which is made of such crooked rails that every time a pig crawls through he comes out on the same side.

What is that which must be taken from you before you can give it away? Your photograph.

What is that which has its head at one end and its mouth at the other? A river.

PERSONAL NOTICES.

Luther Tucker, Senior Editor and Proprietor of the *Country Gentleman*, died at his residence, in Albany, N. Y., January 26th, at the age of a little over seventy years, after a long, useful and honorable career, as an agriculturist and an agricultural journalist. Personally, Mr. Tucker was universally respected and esteemed.

——The distinguished Navigator and Scientist, Commodore M. F. Maury, died at Lexington, Va., on Saturday, February 1st. At the time of his death he was Professor of Physics in the Virginia Military Institute. In his peculiar line of thought and research, he has probably left no equal.

——P. J. Malone, Esq., late of South Carolina, has become editor and co-proprietor with Mr. E. B. Aspinall, of the *Brenham* (Texas) *Weekly Times*. We wish our friend and former contributor the best success in his new field of labor. We are sure he will deserve it.

——Gen. John B. Gordon has been elected Senator for the long term from Georgia. He is, we believe, a native of that State. He is about forty-five years of age, and during the civil war earned distinction as a corps commander in the Confederate army.

——Messrs. E. J. Hale & Son, of New York, have brought out the Poems of Henry Timrod, in excellent style, as is fitting to the author's graceful lines, and Mr. Hayne's admirable biographical tribute to his friend and brother poet.

——"Christian Reid," is the *nom de plume* of Miss Fisher, daughter of the late Col. Fisher, of North Carolina, and author of "Valaria Aylmer," "Morton House," &c.

——Col. J. P. Thomas has been elected by the students of Furman University to deliver the Commencement Oration before the literary societies of that Institution, on the third Wednesday in June next.

——A beautiful young widow of Memphis, Tenn., has joined the Oneida Community, and recorded a vow to remain forever true to the members thereof.

——Miss Sallie A. Brock is the author of a new novel, entitled, "Kenneth my King," which G. W. Carleton & Co., have published.

——Captain Thomas E. Hogg, author of "The Fate of Marvin," is a resident of Rusk, Texas.

——Elihu Burritt, the Learned Blacksmith, is Secretary of an Agricultural Club at New Britain, Conn.

PAMPHLETS RECEIVED.

"A Manual of the Cultivation of the Grasses and Forage Plants at the South." By Col. C. W. Howard, Kingston, Ga. An admirable and much needed little work, by the most competent writer on the subject in the South—a gentleman who knows by actual experience what can be done with the grasses in our climate; and it costs but 25 cents to get the results of his experience, in this pamphlet.

"Purdy's Small Fruit Instructor." By A. M. Purdy, Editor of the *Fruit Recorder and Cottage Gardener*. It contains practical instructions for planting, growing and marketing small fruits, and is a summary of what the author has learned by twenty years experience and observation. [Price, 25 cents. Address the author, Palmyra, N. Y.]

"Progressive Agriculture and Industrial Education." By Eug. W. Hilgard, Professor of Agricultural Chemistry at the University of Mississippi. An able and eminently practical address before the Mississippi Fair Association.

"Agriculture as a Pursuit." By E. M. Pendleton, M. D., Professor of Agriculture and Horticulture in the State University of Georgia. This is the new Professor's Introductory Lecture before his class and is published by request of the Faculty.

MERE MENTION.

At the Royal Agricultural Society's exhibition at Smithfield, London, recently held, an American manufacturing firm sold 700 reapers in one lot to a Polish gentleman present, for the purpose of examining and procuring the best agricultural implements for export to his country.

——*Journal d'Agriculture Illustré*, is the name of a handsome pictorial monthly, printed in French and English, which comes to us from Montreal, Canada. [J. Perault, proprietor; $1 a year.]

Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

Plants Producing Spices and Condiments.

THE

Rural Carolinian.

Progress with Prudence, Practice with Science.

D. H. JACQUES, Editor.

Vol. IV.] CHARLESTON, S. C., APRIL, 1873. [No. VII.

Thoughts and Suggestions for the Month.

If the reports which come to us from all parts of the country are trustworthy, there will be a larger area planted in cotton this year than last, and a much greater quantity of the commercial fertilizers used to increase the yield. With a favorable season, therefore, we may anticipate a heavy crop and a decline in prices. Well, it is useless to remonstrate. "Cotton on the Brain," is not a curable disease. All we can do, is to wait till those who have contracted it shall die off, and give place to more sensible men, and a more diversified agriculture.

Whether little cotton or much is to be put in, the crop will now properly claim much of the planter's time and thought. Let the work of planting be well done, so as to secure, if possible, a perfect stand without replanting. Mellow beds and even rows are essential to good cultivation. A fine-toothed harrow is an excellent thing to run over the tops of beds. It may have a cross-bar behind the middle with a triangular piece of wood attached, point down, to make a clean, even trench for the seed. This facilitates the first working very greatly. We strongly recommend a trial, on a few acres, at least, of check planting, as described in the March number of the Rural Carolinian, by Mr. McCutchen. The saving in hoe work, which may be made by working the crop both ways, is a very important consideration.

———It seems like the reiteration of a truism, to speak of the necessity of diversified industry, to give real prosperity to a State or a country. Yet, our people do not seem fully to realize the truth, or, realizing it, do not act upon it. Agriculture is the basis of all the other industries, but a basis is nothing without a superstructure. We must have the mechanical trades, manufactories and commerce, to furnish us with the necessary supplies of implements, machines, utensils, clothing, &c. These, in their turn, make a home market for our cotton, our wool, and our grain, and give enhanced value to our real estate. It is, then, as clearly the farmer's interest to encourage these industries, as it is to promote the welfare of his own special business, since in promoting the one, he helps the other. We

want now, particularly, cotton mills, and manufactories of agricultural implements, and we must continue to agitate the question of manufacturing till we get them. We are glad to see an awakening on this subject in all parts of the South, and we look forward with hope of brighter days and renewed prosperity as results.

———We require not merely diversified industry, in the general sense in which we have spoken of it, but in our own branch of business—diversified agriculture. Why are the farmers of the middle, and especially the northern parts of South Carolina, and of the South generally, more prosperous to-day than those of the low country? Mainly, we think, because they are pursuing a wiser policy in regard to diversity of crops. They plant more largely the provision crops, especially small grain, grow clover and the grasses, raise a few sheep, and give more attention to stock generally. Their eggs are not all in one basket, and whatever may happen in the cotton crop or the cotton market, they are sure of something to fall back on, and their families, and their stock, are ensured against want. If cotton does well and brings a good price, they see the color of the money, (or a part of it,) which it brings. We have never discouraged cotton planting in the South, but we have felt it a duty to protest against the ruinous "all cotton" system, and we expect to continue to do so.

——— Dr. Daniel Lee says many good things in the *Plantation*, and among these we count his injunction, "This year pull no fodder." Why? He answers: "*Simply because you can do a great deal better!*" How? Make hay, and drill corn for fodder. "Compare," he says, "the small bunch of fodder one pulls from an acre of corn, with the labor necessary, and the injury done to the grain, if pulled early enough to have first-rate fodder, with twenty-four thousand pounds of fodder, cut when all the nutriment in the seeds of this magnificent plant are yet in its blades and stalks! Put all the nourishment there is in fifty bushels of corn, back in the plant for *hay*, cure this hay properly, and can a man reasonably doubt that an acre of such fodder is more profitable, pound for pound, than the blades, which are simply *straw* after the grain is made? To tell the truth plainly, pulling a few hundred pounds of corn straw to have a little 'roughness,' and keep a few rough-looking cattle and mules from starving, is a sorry feature in Southern Agriculture."

———In the first working of corn, run close to the row, and if the land requires it, you may run deep and if the corn be as young as it should be, there will be no danger of breaking the roots. All after-workings should be shallow. In some cases, a cultivator with the front tooth out, and the frame so contracted as to bring the first two side teeth close to the corn, may be used with advantage for the first working, double team straddling the row and working both sides at once.

———Hilling corn, as the process is generally understood and practiced, is an absurd and injurious process, which, instead of helping to support them, as many suppose, greatly weakens the stalks, by destroying or covering up the prop-roots with which Nature has supplied them. This compels them to partially exhaust themselves by putting forth others, which, after all, cannot efficiently perform their office.

Cause and Cure of Drought.

Much attention has been given, latterly, to this subject by scientific and unscientific agriculturists. It is indeed a question of absorbing interest, and he who shall solve it will have achieved a more brilliant success, than would be the discovery of the philosopher's stone. The prevalent theory seems to be, that the destruction of our forests has caused the more frequent recurrence of drought, and it is proposed to remedy the evil by their extensive replantation.

We have not the temerity to controvert with the learned scientists who maintain the influence of forests on rainfall, and that our droughts are attributable to their destruction, yet we desire to state some facts, which, after reading all that has come within our reach on this subject, still bar our assent to this theory.

Admitting all that is claimed for the influence of forests on rainfall, is it a fact that our country is sufficiently denuded to warrant the conclusion that our droughts are thus occasioned?

The belt of country lying along the Atlantic and Gulf Coasts from Currituck Sound to the Mississippi River, embracing the six States, North Carolina, South Carolina, Georgia, Florida, Alabama and Mississippi, contains, in round numbers, 290,000 square miles, or 185,000,000 acres. Of this, in 1860, there were only 23,700,000 acres improved or cleared land, leaving 161,000,000 acres unimproved or forest land. Since then many thousands of acres in excess of what has been cleared, have grown up in pines, &c., greatly lessening the amount of cleared land.

Much stress is laid on the alleged fact, that rainfall has been greatly increased in Egypt, of late years, by the extensive plantation of forest trees.

Egypt contains 200,000 square miles, 17,000 of which are in the Delta, the balance 183,000 being, mostly, arid desert.

Now if the planting by the Khedive of a few millions of trees, has increased the rainfall in that parched and desert land, it seems to our unscientific mind, that our 161,000,000 acres of forest, interspered with rivers, creeks, lakes, ponds, lagoons and swamps innumerable, with a shore line of over 2,000 miles ought to keep us supplied.

Very high authority declares that 1-5 forest land is necessary and enough to preserve the proper hygrometric and electric equilibrium. Surely, if this be true, with nearly $\frac{7}{8}$ of our country still covered with forests, rivers, lakes, swamps, etc., we must look for some other cause of the diminution of rainfall than the "disboscation" of our forests.

That some "learned pundit," whose only outlook upon the world is the cupola of his college, should

"Into strange vagaries fall,"

and imagine the country was being denuded of all forest growth, does not surprise us, but how any one, who lives and moves in country parts, should get such a notion in his head. we cannot conceive.

Get upon any elevation in South Carolina that commands an extensive view, and the landscape presented will be that of wide-spread forest, dotted here and there with naked spots of cleared land. We really believe there are more trees,

by countless millions, in South Carolina to-day than when America was discovered. Then, and till within seventy-five years of the present writing, the custom prevailed among the aborigines and their successors of annually burning off the forests. These annual fires kept down all undergrowth, and the forests were more open than many of our newly cleared fields. With the cessation of this custom there sprang up a dense and rapid undergrowth. Here may be found the true secret of the dying out of certain forest trees, as the chestnut and the chinquapin, whose disappearance from some sections has been erroneously, we think, attributed to drought. In corroboration of this view, we may state that in the mountains, where the custom still prevails of burning off the woods by the nut gatherers, the chestnut still flourishes with pristine vigor. Who ever saw isolated trees, standing in open fields, however nude, that were not vigorous, even in times of severest drought?

We are told that an ordinary sized peach tree will draw up from the earth and exhale eighteen barrels of water annually, and that a single sunflower will exhale nearly four pounds per day. Now if our trees and bushes generally possess this faculty of drawing up and exhaling water, in the same ratio, we conclude the atmosphere of our dense forests ought to be kept so supersaturated with moisture that there would be a continuous, unceasing, everlasting drizzle-drozzle!

But are droughts more frequent or of longer duration than formerly? We mention a single fact.

In 1819, over half a century ago, when the cleared land was less by many millions of acres, and the amount of forest proportionally greater than now, occurred the severest drought within the memory of the oldest inhabitant. The whole State, from the mountains to the seaboard, was parched and blistered. Cedar Creek, a large stream in the middle country, rising near Ridgeway, in Fairfield, and debouching into Broad river, a few miles above Columbia, and running a course, in its meanderings of fifty miles, stopped running, a thing that has never happened since. Wagoners from the up country, hauling to and from Charleston, nearly perished, with their teams, for want of water, the water courses and swamps of the low country having nearly all dried up.

From all that we can learn of the meteorology of our country for the last 200 years, we do not suppose there has been any material changes in the character of the seasons. There seem to have been alternations of rainy and dry cycles of variable uniformity and duration.

That forests have any influence on rainfall, we do not deny—nor admit. Whatever may be the cause of our droughts, we feel assured they are never occasioned by the lack of moisture in the atmosphere. There is never a time, in our country at least, when there is not enough water in the atmosphere for all the purposes of rain making, other conditions being favorable. Who has not noticed, even in the dryest and hottest weather, when seated at the dinner-table, the rapid deposition of vapor on the cold surface of his glass of ice water? The causes of drought, we believe, are to be found alone in the laws which control the air-currents. There is never a time when a good, steady blow from a certain point of the compass will not bring rain. The main requisite in qualifying your rain-maker for invariable

success would be the simple endowment with the power to whistle up, at will, the right kind of a breeze.

We think those who so confidently expect an increase of rainfall by planting trees, or by any other artificial processes, are doomed to disappointment. The cure of drought is not to be compassed by human instrumentalities, any more than the alteration of the seasons. Happily it is so. Doubtless, droughts have a conservative office in the economy of nature, and are as indispensable as rain. They will continue to occur in the future, as in the past, forests or no forests. We have no fear that the rainfall will ever cease, or materially diminish, even though every tree should be felled and every acre be tilled on this broad continent. The Ruler of the universe has not so blundered in fixing laws for the government of our planet, that the operation of one should interfere with the operation of other laws. To subdue and till the earth is his command. The teeming millions of American people, a thousand years hence, will require for their sustentation the cultivation of every foot of our soil. We have no apprehension of their perishing for want of rain. Season will succeed season, day and night will not cease, nor seed time and harvest fail; we will have refreshing rains and withering droughts, tempest and calm, sunshine and storm, until the Archangel's trump shall announce the close of this Dispensation.

LITTLE JOHN.

February 4, 1873.

Underdraining for Profit and Health.—V.

MAKING OUTLETS OF DRAINS.

Many drains fail to operate satisfactorily after a few years, on account of defective outlets. "When the outlets are made of stones the influence of the freezing and thawing of the ground, and the tread of heavy animals, will frequently displace many of the stones, so that the passage soon becomes obstructed. If tiles are employed, one or two are sometimes broken, or they disintegrate after having been frozen and thawed a few times. It is a common occurrence to see a pond of water several inches deep at the outlet of a drain, with the water-course six inches below the suface of the water. Such drains are liable to be obstructed in one or two years. The outlet of every drain, especially of main drains, should be made with much care. If stones are employed, a good outlet may be made by using a covering-stone two or three feet long. Otherwise it will be advisable to make a wooden outlet, as illustrated by Figure 1, which is made by first placing a board or plank on the bottom of the ditch, if the ground is soft, then by setting a strip four inches wide on each side and covering with short pieces, as shown by the cut. A board is frequently laid on lengthwise, which is objectionable, as the covering will not be so strong as if the same board were cut in pieces and laid crosswise. The water-channel beyond the outlet should always be kept clear of mud and gravel, so that the water will flow away rapidly from the drain. If a pond is desirable

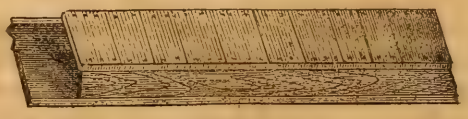

Fig. 1.

for collecting water for stock to drink, let an excavation be made at a short distance from the outlet of the drain, so that the water may wash out all the fine earth that may be accumulated in the water-course of the drain."

A CONVENIENT WATERING SLUICE.

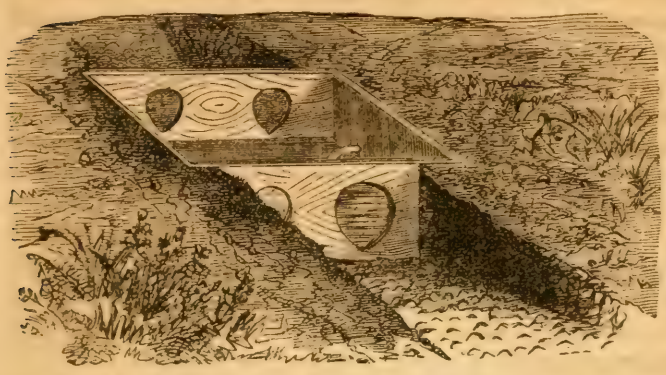

Fig 2.

Figure 2 represents a mode employed by Mr. Todd, as described in the Report of the Department of Agriculture for 1870, in constructing watering sluices in fields where all the water had been collected in underdrains. "A gorge eight or ten feet wide was excavated with plough and scraper directly across a deep drain, and a plank box without bottom or top, eight or ten feet long, was set from bank to bank as represented. A hole in the end-plank permitted the water to enter the box, and a similar orifice allowed it to escape through the other end. By this arrangement sheep and swine, as well as horses, mules, and cattle, could step down to the sluice and drink at pleasure. The water should be four or five inches deep in the box, and the inclined excavation should be paved with stones, so that heavy animals may not poach up the ground, and thus make a deep mud hole. The surface of the pavement should be as low as the surface of the water. Such sluices should be constructed when deep drains are made, if water for domestic animals is an object. The holes in the sides of the box, through which sheep and swine may put their heads, should not be made so large that small animals may get into the water."

A CAST-IRON DITCHING SCRAPER.

Fig. 5 represents a cast-iron scraper, or "ox-shovel," employed in excavating large ditches. It is provided with an iron bail, as shown, in lieu of a log-chain, which is frequently used. Such scrapers are comparatively light and strong, and are made of various sizes. The inside should be kept as bright as the mold-board of a plough. When not in use, the surface should be washed clean and covered with a little linseed or cotton-seed oil, or with fresh tallow, to prevent rusting. When a log-chain is employed instead of a bail, a wooden stretcher should be used to hold the chain apart, so that the earth will slide more easily into the implement.

Fig. 5.

Jute Culture in the United States.

Experiments in cultivating jute in the Southern States thus far indicate that both the climate and the soil are well adapted to its growth, and there is a fair promise that its production will become an extensive and profitable industry in that section. Its fibre supplies material in manufactures for which there is a rapidly increasing demand, and which, except to a very limited extent, does not take the place of cotton; while, therefore, it will not supplant the latter, nor compete with it in the market, it may enlarge the area of profitable rural industry in the South. It is claimed that were the South to divide the labor it now bestows exclusively upon cotton between that and jute, the result would be an increase in the value of the cotton crop, it having been proved that, beyond certain limits, an increase in the product occasions a diminution in the total value; that it supplies the raw material for coarse fabrics, which are now largely imported by the cotton-growing States, but which might be manufactured by their unskilled female laborers at a saving of millions; that it can be raised and prepared for market at a greater profit per acre than cotton.

The following communication has been received from Mr. E. H. Derby, of Boston, who is an enthusiastic believer in benefits to result to the South, and so to the whole country, from jute-culture:

As the jute-plant has been acclimated in the Southern States and I have exerted myself to aid in its introduction, many questions have been addressed to me from the South as to the culture and harvesting of the plant. I have consequently written to a friend in India, and subjoin extracts from his reply, which will be useful to the planter, if published in your valuable report. I am convinced by this reply and by other letters from the South that the rich lands of Florida, Louisiana, Texas and Mississippi will, with fair cultivation, yield 3,500 pounds, or ten bales, of fibre to the acre, in place of one-tenth of that amount of cotton. I am convinced also that it can be produced at less than one-tenth the cost of cotton, that the caterpillar will not touch it, and that if planted around the cotton-fields it may possibly protect them from that voracious insect. I am also led by my letters to hope that it will attain to its full growth in three to four months, and that the same field may yield two crops in one season. I have just returned from Scotland, where I visited the jute factories in the flourishing city of Dundee, where the import and manufacture of jute is making wonderful progress.

The subjoined table gives in tons the import and manufacture of jute in that city since 1837:

	Tons.
In 1838	1,136
In 1847	6,966
In 1854	16,590
In 1872	96,000

Since 1854 the increase has been about 500 per cent., and in this interval of time the cotton manufacture has not grown at one-fifth of that rate. Some of the jute-yarn which I saw at the factories is spun very fine and sold for 8 or 10 cents a pound. It is used for bags and carpets, and some of the latter, handsomely colored, have sold for 16 cents per square yard. It is also interwoven with silk, linen and woolen threads into cheap cloth.

By the subjoined extracts, you will notice that the jute-seed from one acre will suffice to plant fifty acres, and that the plant is usually gathered some weeks before

the seed ripens. I suggested this idea last summer to Mr. Chapman, of Point Coupee, but presume that most of our planters have this year allowed their seed to ripen, in which case they may have plenty of seed but inferior fibre, and possibly require the ramie-machine to separate the fiber from the stalk, and possibly thus make it available for coarse if not for fine fabrics. The progress of events convinces me that the jute is just what the South requires to diversify its industry and to fill up the gap when cotton is a failure. With the growing demand for it, jute promises to pay much better than cotton.

I noticed in the jute-mill at Dundee that after the jute was sorted a woman placed a layer of it on the floor, then sprinkled it freely, first with water and afterward with oil; she then placed another layer over that and sprinkled it in the same manner, and so piled up layer upon layer. This sprinkling was before the fibre was spun.

Mr. H. H. Stevens, of Webster, Worcester County, Massachusetts, a manufacturer of jute imported from India, to whom this Department sent a sample of that grown in Louisiana for examination, reports that in length, strength and color it is fully equal to India jute.

Mr. Thomas H. Dunham, of Boston, to whom a sample was forwarded, writes as follows:

The quality is very superior. The market is just now depressed very much. Some parties here have lost heavily on imported jute-butts, and this season (before the fire) India goods were imported at immense loss. The present rate is 6 to 8 cents a pound (gold); the usual rate 10 to 13 cents (gold). Your sample is very superior, and at 10 cents (gold) it would be safe to quote.—*Monthly Report, Department of Agriculture.*

Why Sam. Simpson Sold Out.

The following account of the causes which led to the emigration of one of the *guerillas* of American agriculture are instructive. We hope and believe that the picture here so graphically put into words will not be recognized as a likeness of any reader of the RURAL CAROLINIAN, all of whom we are willing to assume, are too sensible to "sell out" for similar reasons:

My neighbor Sam. Simpson has sold out and is going West. There has been a plain, honest, industrious, economical German—Hans Leibenstein—hanging around Simpson for some time trying to purchase his farm. At last Hans got it. Simpson thinks he sold it at a bargain. Doubtless Hans thinks he got it at a bargain. I had an errand down to Simpson's the other night. I had not heard that he had sold his farm; but upon my entrance into the house, I saw by the look on the faces of the family that some unusual excitement was animating them.

"Well, Crumple, you're going to loose me for a neighbor," was Simpson's first words after I had got settled in the splint-bottomed chair his daughter Sally handed me; and the whole Simpson family looked at me as if they expected I would jump out of that chair on account of the news, with a suddenness and force only equalled by an explosion of nitro-glycerine under me, but I didn't. I simply asked, "How's that?" "I've sold." "Sold what?" "The farm." "To whom?" "Hans." That was the whole story. I didn't need any further explanation; but Simpson proceeded to say:

"You see the old farm is completely run out. I can't make the two ends meet the best of years. I've got tired tumbling around among the stones, and I'm going

where there's some virgin soil that will produce something. So I struck up a trade with Hans. He has been after it, off and on, for a year or more. I wanted $40 per acre for the old place. He offered me $25. Finally, he offered me $30; and, after considering the subject, I told him I would take it if he would pay me cash down. Had'nt any idea he would do it; but he said if I would throw in the stock and farm implements he thought he could raise the money. I finally told him I would; and what do you think, sir? He hauled out of his greasy old pants pocket a $1,000 bill and handed it to me to bind the bargain, and said as soon as the papers were receipted he'd pay me the balance, which he has done to-day. I feel kind of sorry to part with the old place; but the thing is done and there's an end on 't! What d'ye think?"

All this time my Crumple nature had been rising within me like an inspiration. Here was this man Simpson who inherited this farm—one of the finest in the neighborhood—who had skinned it without scruple until it would scarcely raise white beans under his system of treatment. And he had got to leave, or mortgage the farm of his ancestors to live on.

Then here was Hans, who came into the neighborhood with his frau five years before, with only his wife's strong and willing hands, economy and industry. They had rented a worn-out farm which they had finally purchased and paid for, and had saved $3,000, with which to pay for Simpson's 100 acres. So in answer to "What d'ye think?" I was ready to respond; and did it in this wise:

"What do I think? I'm glad you're going neighbor Simpson! I'm glad Hans has got the farm. He deserves it, you don't. He has got brains and industry; you have'nt got either. Under your management the farm is a disgrace to the neighborhood; Hans will make it a credit. Your farm lying next to mine depreciates the value of my land ten per cent; the same land owned by Hans will add to the value of mine 20 per cent. I shall be the richer for your going and the poorer for your staying. I am glad you're going."

You should have seen Simpson's and his family's faces. They grew cloudy and long. Indeed, I believe they began to scowl at me. Simpson said:

"You're pretty rough on an old neighbor, Crumple, now that he is going. I thought you and I had always been friends. I've tried to be a good and accommodating neighbor. You've been a good one to me, and I'm sorry to leave you; but if you're glad I'm going, I'm not sorry either."

"Simpson," I said, "let us understand each other. As a neighbor, so far as neighborly intercourse is concerned, I've no fault to find, and am sorry you are going. In talking about you as a farmer, you are and always have been a poor one. No man with such a farm as yours ought to want to sell—at least there ought to be no necessity for selling. But you are not a farmer. You have'nt got a single quality essential to make a good farmer. In the first place you detest the business; you don't take any pride or interest in it; you don't care whether your land improves under cultivation or not; you want to get all off it you can without taking the trouble to pay anything back; you skin it year after year, and cry out against the seasons; you denounce every man you deal with as a sharper or swindler, because you do not get the prices for your products other people do, and yet you do not seem to know that the reason is that your products are poor in quality, and put on the market in miserable shape; your stock has been running down ever since your father died; you have'nt built a new fence and scarcely repaired an old one; your manure has not been hauled out and judiciously used on the farm; your pigs have bothered your neighbors more than they have benefited you; your cattle have become breachy, and I have had to shut them up in my stables in order to keep them out of my grain; you have distributed from your fence corners more weed seeds than any farmer I know of, and thus given your tidy neighbors more trouble than your favors to them would compensate. In short, it is time for you

to move. You ought to have a virgin farm! It will take you but a few years to strip it of its fertility; then you'll have to move again, and keep moving. You belong to a very large class of farmers who are a curse to any country. The fact is you are not, never was, and never will be a farmer in the right sense of that word. You are only a guerilla. You live by robbery—robbery of the soil. And it is not right, neighbor Simpson. You had better seek some other vocation now that you've got the cash to start with. You like horses; you know horses; you can talk horses from daylight till dark; you can't be fooled with horses; you like to trade horses; you had better go into some smart town and start a livery stable. You'll make money at it; you'll never make money farming; you'll grow poorer and poorer the longer you attempt it."

Just then Sally Simpson clapped her hands and said: "That's so, father! Have'nt I told you so? Mother and I have often talked it over, Mr. Crumple, and you are just as right as can be; and father knows it too if he would only say so. I know you too well (and you've done us too many kindnesses for us ever to forget them,) to believe that you have talked to father in the way you have out of any unkind feeling. It is true, every word of it, father, and you ought to thank neighbor Crumple for talking just as he thinks; I do; and I don't think a bit the less of him either."—*New York Tribune.*

Rapid Maturity of Cotton in 1872.

What with climatic changes of a decided character, which are developing themselves from year to year, and the stimulating effect of commercial fertilizers, the cotton growing season seems likely to be compressed into a very brief period. The cotton on many plantations was unusually late in getting a start last spring, and hence followed the common remark, that a full crop could not possibly be realized without a late fall. The fall came early and the maturity of the plant still earlier —in many cases, by the 20th August—and yet the crop is the heaviest made since the war.

Here then we have the surprising result of a full crop realized in the space of a little more than three months. The intensity of the summer's heat no doubt greatly shortened the growing season. Very early in August the leaves of the plant assumed a blood-red color, which was at first mistaken for rust. Their vitality lingered for some time without any perceptible benefit to the bearing. Rust, however, did prevail at the same time in many places, and more especially where the soil was thinnest. On this vexed question of rust, nothing definite as to its cause or causes, seems to have been reached. It exhibits itself alike on fresh land, where vegetable matter abounds, and on land where vegetable matter has been worked and washed out. And yet vegetable matter, in some cases, seems to be its antidote. For instance, on the border of my cotton field, I had a ditch bank drawn by the hoe over a space of eight or ten feet in width, where the cotton grew and bore finely till frost, while the cotton immediately adjoining died out with rust, and shed every leaf in July. Is vegetable matter at once its bane and its antidote? Probably not. Chemical analysis ought to explain it. T. P. L.

Darlington.

Gleanings From Many Fields.

DISSOLVING BONES—ANOTHER PROCESS.—The following is an English process, and the fertilizer produced is said by the originator, Lord Pusey, to be in every respect equal to the superphosphate made by the ordinary processes. We do not vouch for the statements made, but give the recipe for trial:

Collect the bones and break them up as well as you can with a sledge hammer or an axe. Place them in a barrel sufficiently tight to hold liquids, depositing a little at a time, and mixing in with them as you go, dried, finely pulverized swamp muck—enough to fill all the spaces between the bones, say one part of muck to four parts of bones. Cover the top with a six or eight inch layer of muck alone, after which pour on the urine of the premises from day to day, keeping the mass moist. In from four to six weeks the bones will be entirely dissolved, and ready for application to the soil.

The muck mixed is to aid in the decomposition of the bones, and the thick mass of muck at the top is to act as a deodorizer, and to prevent the escape of ammonia. If there is still an escape, as shown by the smell arising, it may be stopped by throwing on a little more fresh muck.

CHUFAS FOR SHEEP, HOGS AND POULTRY.—A writer in the *Southern Cultivator*, says that the Chufa will yield on impoverished, worn out land more nutritious food for sheep, swine and farm stock generally than any grain, grass or root crop we grow under the most favorable conditions of soil and seasons. He adds:

In April last I planted a half bushel of seed, costing $5.00, on one acre of the poorest land on my place—a bare, bald knoll, so barren of fertility that it would scarcely "sprout cow-peas"—and although the crop received but one working and the seed were planted three by two feet, double the distance required, the yield was over 100 bushels. The grass will grow two to four feet high, uninjured by drought or heat, and is improved by pasturing with sheep; affording an abundance of rich, tender, sweet herbage until frost and an increased yield of roots. The roots are troublesome to gather for market, especially in gravelly or rocky soil, but turn in the hogs and poultry any time from September till spring and they will gather all the crop and more fatness too than they could get from ten acres of corn.

PROSPERITY OF UPPER SOUTH CAROLINA.—According to a Southern correspondent of the *Tribune*, who we are glad to believe is in the main correct in his statements, the upper part of our State, is prospering finely in spite of all the numerous drawbacks with which all branches of business have to contend in South Carolina at the present time. He says:

This part of the country has many advantages not enjoyed by other sections of the South; the climate is better, being near the Alleghany Mountains; water-power is more abundant, timber is more plenty, the lands are not so much worn, the farms are smaller, and the population in this part of the State mostly white. The people are descendants of Dutch and Scotch-Irish, the former from Pennsylvania, the latter from Virginia, who migrated here about the close of the Revolution. What the country needs is capital and white laborers. A few Pennsylvanians have come among us and are doing well. We are glad to have them. May they be followed by many more! The South in a few years will be as rich as ever was, and those who seek a home with us will share in our prosperity.

FIGURES IN FARMING.—The Nashville *Union and American*, the weekly edition of which has an admirably conducted "Agricultural Department," wishes to see the rules of arithmetic applied to farming. The writer closes as follows:

In view of these facts, why will not American farmers instruct their representatives in Congress to aid in the specific object, not of *guessing* at what the soil loses in making a crop, but in carefully weighing it before the seed is planted, and after the plant is grown? Arithmetic must be applied as fully to soils and sub-soils as to all crops. Now, this is not done; and the consequence is that we really know next to nothing about the loss or gain of fertility in land, as a definite quantity. We easily admit that it takes a pound of something to make a pound of wheat; but if we inquire how much of a wheat plant comes from solids in the ground, and how much from water and air, we can only guess as a man guesses at the acres sown in wheat in Tennessee, and then kindly guesses at the yield per acre.

EVERLASTING FENCE POSTS.—A correspondent of the *Western Rural* makes the following rather hard-to-believe, but possibly correct statements:

"I discoverd many years ago that wood could be made to last longer than iron in the ground, but thought the process so simple and inexpensive that it was not worth while making any stir about it. I would as soon have poplar, or basswood or quaking ash as any other kinds of timber for fence posts. I have taken out basswood posts after having been set seven years, that were as sound when taken up as when first put in the ground. Time and weather seemed to have no effect on them. The posts can be prepared for less than two cents apiece.

For the benefit of others, I will give the recipe: Take boiled linseed oil and stir it in pulverized charcoal to the consistency of paint. Put a coat of this over the timber, and there is not a man that will live too see it rotten."

GEOGRAPHY ON THE FARM.—The *Rural Sun* in impressing upon its readers' minds the necessity of system in farming, as in everything else, urges the careful mapping out of the farm, with all its natural features and its artificial divisions, and adds:

Nothing will so much conduce to the adoption of a system of working the farm as a well prepared map, hung where the farmer can see it every day. It will be sure to set him to thinking and planning how best to pitch his crops, and how best to work to save work. And once the farmer adopts a system of farming, he starts on the road to success. It matters not that the system is not the best that could be devised, so long as it is a system it is infinitely to be preferred to the hap-hazard practice of many farmers. We, therefore, advise every reader who owns a farm to make at once, or have made, a map of it and hang it up where he can see it every day. And having made it, study it.

PEOPLE WHO KNOW ALL ABOUT FARMING.—Mr. N. H. Davis, of South Carolina, in an article in the *Plantation* on "Agricultural Publications," thus speaks of a too numerous class of farmers in this country:

He will spend for a bottle of mean brandy, the same money, that would save him one hundred dollars a year, if invested in a good Agricultural paper. This is always the class of farmers who think they know *all* about farming! They do know a great deal about farming. They know more about farming than the writer of this article pretends to know. That is not denied. The question is, how much more could they make or earn, if they were posted from month to month, by such veteran editors as Dr. Lee and Mr. Howard, of the *Plantation*, or Mr. Jacques and Colonel Aiken, of the RURAL CAROLINIAN?

Horticulture and Rural Adornment.

Horticultural Hints for April.

The backwardness of the spring having prevented, to a great extent, the operations set down for last month, we need do little more than refer our readers to the directions given in the March number. As there is now no great danger from frost, except perhaps in the most northern belt of the Southern country, all the tender species of vegetables and flowers may be planted with safety, during the month. If snap beans have not been planted, put them in at once, and where plantings have already been made, more should be planted to keep up the succession. They should be planted about once in two weeks during the season. Beets and carrots may still be planted if more be needed than were got in last month. It will still do to plant lettuce, in the upper country, but here, it will seldom succeed. Perpignan is a good variety for late planting. Mango and tanyah may still be planted, though they ought to have been put in last month.

———So soon as settled warm weather can be relied on, plant sieva beans, or, if preferred, large Lima. The former are better suited to our climate and more productive than the latter, but perhaps not quite equal to them in quality. It is best to have the ground prepared somewhat in advance and the poles set before planting. The ground can hardly be made too rich, provided the manure be deeply dug in and well distributed and mixed with the soil. The soil must be very deep, so that the plants may be able to withstand the drought. We have tried sieva beans as dwarfs, (as reported in a previous number,) with the most satisfactory results, but in the country, where poles are readily obtained, it is doubtful whether the labor of nipping off the vines, to keep them within bounds, will not be greater than that of procuring and setting the poles. We have not, however, determined this experimentally. In town, where poles are not readily procured, the dwarfing system is a good one.

———Fresh, heating manures must not now be applied to the garden. If well rotted composts are lacking, use guano or a good superphosphate putting half the quantity to be used in the hill or trench at the time of planting, and reserving the rest for top dressings. Weeds grow very rapidly now, and unless the surface of the ground is kept moving, we shall soon have an extra and very unprofitable crop to attend to. Grass and weeds, *if taken in time*, are easily and rapidly killed with an iron-toothed rake or the prong hoe.

———Celery, if not sowed last month, should now be got in. Choose a cool, moist, shady spot, (but not under trees,) scatter the seeds on the surface of the soil, which should be very fine, press them in with the back of the hoe or trowel, and water if the soil be dry. The north or east side of a tight fence is a good place. As soon as the plants are large enough to handle, prick them out, keeping them still on partially shaded ground.

———Full crops of okra, squash and melon should be planted, and tomato, pepper and egg-plant transplanted into the open ground. Another planting of sugar corn may be made, also common corn, which withstands the worm better. In the upper country cabbage plants may still be set out with advantage, provided the soil be rich, deep and moist. Green glazed is best, where worms are troublesome.

———As March proved a cold backward month, many of the flower seeds, especially tender annuals, failed. Let them be replanted at once. Lily and gladiolus bulbs and dahlia roots may also still be put out for late blooming. Hyacinth bulbs must be taken up when their leaves have faded, put in paper bags with chaff or some material that will not heat, and kept in a cool place till fall.

———The dahlia does not give us here that perfection of bloom which is attained in cooler and moister climates. It is disposed to blossom too early in the season, when no good flowers will be produced. The plan that works best here is to plant late, and retard the flowering as long as possible. If they can be kept from blooming till fall, they will make a more satisfactory display.

———Grape-vines will throw out extra shoots and suckers, which should be rubbed off at once. Young peach trees should be looked after for the same purpose. Mulch newly-planted trees and vines to keep the ground moist about the roots. This is better than watering.

———Strawberry beds must be kept free from runners, if you desire fruit rather than an increase of plants. It is better to *cut* than to pull them off. Mulch and water the plants, if a long bearing season be desired.

Raspberries in the Shade.

Noticing an article on the subject in the February number, I would add, that currants and gooseberries—particularly the latter—are much better for being in the shade of a tight board fence, or stone or brick wall. Gooseberries scald badly in a hot sun, and half the crop in my garden last summer was thus destroyed.

If fences are too costly to erect to shade berries, a hedge growth of any kind of trees will answer; but in this case, the berries must not be planted too near the hedge, otherwise its roots will rob those of the berries of the nourishment that is indispensable to their full growth and perfection A grape trellis may be substituted for a hedge. In this case, it must be trained sufficiently high to shade the the berries. The trellis top ought to be arched somewhat towards the berries, otherwise it will not protect them at noon, when the sun is nearly vertical.

To prevent gooseberries from mildewing, it is essential to mulch them three or four inches thick. All fruits are benefited by a mulch, from the apple and pear down to the strawberry. In a sandy soil, mulch is absolutely necessary, unless the summer should prove uncommonly cool and wet. By shade and mulching, I grow all kinds of fruit, of large size and in great perfection, in a part of my

garden near the sea-shore, the soil of which, in its natural state, is an *utterly barren white sand.* When I began my experiments on this unpromising soil, all my neighbors volunteered the opinion, that I was only wasting my time and money. However, I persevered against their discouragements; and in the second season after planting, I had plenty of strawberries, gooseberries and raspberries; and in the third season, in addition to the above, I had peaches, dwarf apples and pears, blackberries and grapes, to the great astonishment of my encouraging friends. I had also planted other and better soil, where the fruit has of course, grown with less care and more abundantly and rapidly. The patch of sandy soil being near to my cottage, and consequently more convenient for a part of the garden, was the reason I undertook its cultivation;—moreover, I am fond of experimenting a little, and especially when any one flatters me with the prospect that I cannot succeed; as in such a case, nine times out of ten, I am just obstinate enough in disposition to determine that I will command success, if such a thing be possible.

In Europe, to grow early and late fruit, they usually build a brick or stone wall of suitable height, running east and west. On the south side they plant for early, and on the north side for late. In England, on a stiff clay soil, I have seen strawberries growing in great perfection on the north side of a brick wall as late as September. Our summers are so much hotter and drier in America, even as far North as 43 or 44 degrees, that it is probable we could not prolong the growth of fruit in this way, over two to four weeks beyond the usual time of ripening. Perhaps in exceptionable instances ripening might be prolonged six weeks.

New York. A. B. ALLEN.

The New Crimson Primrose, (Primula Japonica.)

The London *Floral Magazine* remarks: "Since the day when Lilium Auratum was displayed for the first time to the horticultural public, we cannot recollect so great a sensation to have been occasioned by any plant as by that which we now figure."

It is styled in England the "Queen of the Primroses," and is perfectly hardy there. It was introduced by Mr. Fortune, from Japan. The leaves resemble those of the English Primrose, but are about three times the size; the flowers are produced on a tall scape in whorls, the color being a rich rosy purple, with a dark eye; the seed takes a long time to germinate.

Henry A. Dreer, 714 Chesnut street, Philadelphia, has the seed.

The Chinese Primrose (*Primula sinensis*) is a well known, charming and profuse flowering plant, indispensable for winter and spring decoration in the Conservatory or Greenhouse, but not equal to the foregoing in beauty.

A New Cockscomb (Celosia Huttonii.)

A branch of Celosia Huttonii.

This is one of the novelties of the present season which is likely to become a favorite. It is thus spoken of in Dreer's Catalogue from which also we copy the accompanying illustration:

This beautiful plant was introduced by the Messrs. Veitch, of Chelsea. It is described of compact, pyramidal form, and bushy habit, profusely branched, each leading branch being tipped with a small spike of bright crimson flowers. In color the plant resembles the well-known *Iresine Lindenii*, the upper surface of the leaf being of a deep claret color, while the under side is of a bright crimson shade. As a bedding, or sub-tropical plant, it will take a high rank from its fine habit, and rich coloring.

Vegetable Plants for the South.

Every few days, during the summer months, I am written to by some of your readers in the Southern States, wanting to know how they can procure plants of celery, cabbage, cauliflower, &c., to plant so as to produce crops of these during the fall and winter months. Plants can easily be raised here at any season, from May to October, but the time that it is necessary to plant for the fall or winter crops in South Carolina or Louisiana (August and September,) it is hardly practicable to ship with safety, particularly celery plants, for if packed more than three or four days (unless the weather is very favorable when set out,) the chances are that many would die. To produce plants in these latitudes by seed sown in the ordinary methods, during the month of June, July or August, rarely results in success, but an experiment in raising celery plants in which we have just been successful here this season, suggests that the same plan may be adopted in the South-

ern States. Our celery plants are always sown here from the first week in April to the first week in May, but this season the weather was unusually hot and dry during May, so that our crop of celery plants sown April 15th was found, on examination the first week in June, to be a partial failure. I had never sown as late as this before, but plants must be had, and the experiment was worth trying. So we again sowed on well-prepared ground, rolled carefully, and covered the seed-bed an inch deep with salt-meadow hay. Of course, any similar covering will do, if salt-hay is not procurable. The seeds germinated in six or eight days from time of sowing. As soon as this was apparent, the covering was partially removed, and in two or three days more further removed, except just enough to cover the soil, so that the bed got the full rays of the sun, yet modified by the sprinkling of hay over its surface. The advantage of the hay-covering is two-fold; it prevents heavy rains from battering the soil, and it also prevents the escape of moisture. Our experiment has been a complete success, as we have more plants from one pound of seed sown in June than from four pounds sown in April, though under the ordinary conditions the opposite result might have been the case. Now, plants of celery, cabbage or cauliflower can no doubt be successfully raised by this plan in the Southern States, when the ordinary method of sowing without covering with hay would be almost certain to fail. Where hay is not procurable for covering, an excellent substitute would be the pendulous moss (*Tillandsia*) which grows so abundantly in the woods of most of the Southern States. It is difficult to say at what time the sowing should be made, as much would depend on locality and the condition of the atmosphere after sowing. So the safest way would be to sow at different times, say from June 15th to August 15th. The result, if successful, would well justify the trouble and expense, as all these vegetables, from the hitherto difficulty of getting plants to set out, have brought enormous prices, celery often selling in the markets of New Orleans and Charleston for 25 cents per head, while the average in New York is hardly 3 cents. There is no reason, either why cauliflowers could not be grown finely in the mild temperate atmosphere of November and December in Charleston or Savannah, and shipped to New York. The transportation at that cool season would be safe and during the month of December it is safe to say that average heads of cauliflower would sell for $30 or $40 per 100 in the markets of New York. I saw some in the grounds of Mr. Van Sicklen, of Jamaica, L. I., in November of 1870 (which he had protected from the frost), for which he was receiving $10 per dozen, or nearly $1 each! There is a wide field in the South for enterprises of this kind, if energetically undertaken. All cultivation so far has been with a view to get vegetables *early*, but in my opinion they might be raised in many instances to better advantage, if grown to fill up the blank in vegetation that our frost-bound earth at the North makes during the winter months.

For example, spinach sold here the past March for a few weeks at $20; horse-radish at $30, and lettuce at $10 per barrel, simply for the reason that everything was frozen up solid. Now there is no reason why these—particularly spinach and lettuce—could not have been grown in as good condition in the neighborhood of Charleston or Savannah in March as they could be raised here in June, when we are abundantly glad to get from $1 to $2 per barrel for them.

PETER HENDERSON, *in American Agriculturist.*

[Mr. Henderson, the well known author of "Gardening for Profit," is a sound, practical man, and his suggestions are always worthy of the most respectful consideration. They are particularly so in this case. Though the plan recommended is by no means new to us, we presume it has not been generally practiced or known; nor can we always succeed even with the mulching. The plants will generally come

up, but are often killed by the hot sun while young. During the past season, we lost several sowings of celery, though the seed bed was covered with rice chaff, in one instance, and with hay in the others, and partially shaded. The mulch greatly increases the chances of success, however, and it is worth while always to apply it on seed beds of celery, cabbage, &c., sowed during the summer.—EDITOR.]

Hon. Marshall Pinckney Wilder and his Camellias.

You know, Mr. Editor, the home and greenhouses of Hon. Marshall Pinckney Wilder, President of the American Pomological Society, but all do not, nor do they know that the most beautiful flower of a half tropical climate, the Camellia has been for a half century one of his pets, and that he has so loved it that he has grown, year by year, as he has his children, new plants; and while he has had to name his children in rotation, these floral seedlings have been selected from their beauty and association, then named after the dearest products of his life, *i. e.* wife of his bosom or daughters of his love.

I confess, I am afraid to pencil my thoughts of these productions, and also of the fruit orchard of Mr. Wilder; but let me do a little, draw attention, and then, you, and other capable writers, may do more. Let us remember that here in Mr. Wilder's green houses, stands the oldest good Camellia plant known. He has had it over forty years. It is the Floyii, and has even now the best foliage of all. From this plant have sprung, by Mr. Wilder's care and scientific intelligence, varieties of so much beauty that the florists of the old country have sought and bought them at exhorbitant prices. Let us name briefly a few of them, viz: *Wilderii*, a name to characterize origin—the flower of which is a rosy pink and of a perfect form.

Mrs. Tryphosa Wilder, a flesh-colored flower with stripes of rose—beautifully cupped in form.

Mrs. Abby Wilder, is a large flower, white, occasionally touched with pink. It is the second of Mr. Wilder's loves, and he has now one plant of it twelve feet high. I feel a little sensitive in noting the last floral beauty, illustrative of Mr. Wilder's love; but when I speak of the Camellia named *Mrs. Julia Wilder*, I have only to write (however, I would do otherwise,) of its irreproachable beauty of flower, and not of the gentlewoman after whom it is named. In form, it is perfection, each petal is as perfect as those God gave to the finest flower in Eden, and when he gave the tints to perfection of beauty, they were embodied in this Camellia.

Abby Tryphosa Wilder is a sport from Abby Wilder, producing a flower of similar size, but of a rose color.

Jemima Wilder is a vigorous plant, of a deep, rich, dark foliage, with a flower, lilac rose in shade of color, but of a compact form.

Nancy Jewett Wilder, is varied in the eyes of visitors, or, as perhaps, its flowers exhibit—as either a clear, full, perfect rose color, or a light crimson, imbricated, but all the time very double and perfect.

This and *Abby Tryphosa* are confirmed sports, as we have before recorded.

Grace Sherwin Wilder is a sport from the plant named Mrs. Abby Wilder, and so delicate in its roseate color of petals that we never look upon it without recalling the delicate blush, that blooms on the cheek of her from whom comes its name.

But enough now of Camellias, you can see and write of them, the rest—some dozens—when you come to Boston. Let me now touch the item—that while your Southern fruit growers, imagine they have (and so they have) many good items in fruit life, yet a visit to the Pear and Cherry Orchard of our good, jovial, kind, old Honorable Marechal—and his name is Wild-er—at Boston will convince them that even New England produces men of value and intelligence.

F. R. ELLIOTT.

[We should like to show our good northern friends, and especially that prince of horticulturists whose beautiful plants are spoken of in the foregoing communication, Camellias of the choicest varieties—hundreds of them, covering acres of ground—that we know of on the banks of the Ashley—not green house shrubs, but trees—some of them three feet in circumference at the base and thirty feet in height. In January or February, they would have been a sight worth a journey from Boston to see. Ed.]

Seasonable Orchard and Garden Notes.

Mulching and Watering Plants.

We can not prevent droughts, and perhaps it would not be well to do so if we could, as they have their use in the economy of nature, but to guard against injury from their recurrence is proper and profitable. That this can be done, to a large extent, has been demonstrated again and again. That absolute security against drought is attainable, without efficient irrigation, we do not affirm, but merely that we can so control the moisture in the soil that in all but extreme cases our crops will flourish unchecked. The means to be applied generally, and on both a small and on a large scale, are underdraining, deep breaking up and frequent stirring of the soil. In the orchard we may add mulching, and in the garden mulching and watering. Watering in time of drouth, in the way it is generally done, however, often does more harm than good. The surface merely is wet and soon becomes as dry as before and harder than ever. The ground should be well soaked and the watering not frequent. In the case of trees, shrubs, and large plants, it is well to draw away the surface earth from them, apply the water and then return the dry soil. This prevents immediate evaporation. In other cases, make holes with a dibble or sharpened stick and pour the water from the nozzle of the watering pot into them. The plants may afterwards be slightly sprinkled from the rose of the pot, and the ground stirred with the pronged hoe.

How to Keep Plants in Bearing.

The production of seed is an exhaustive process and, as a rule, its completion is signalized either by the death of the plant, if an annual, or by a temporary suspension of the process of growth, if a biennial or a perennial. The immediate end for which nature has sustained it has been attained. If we are cultivating it for seed, our

object is the same, and we should not interfere with Nature's processes, but if, as in the case of the Okra, the Cucumber, and the Summer Squash, we make use of the immature fruit and desire to increase and prolong its production, we must carefully cut off, before maturity, all that is produced, whether we can make use of them or not, so as to encourage an abnormal production. If seeds are desired, certain plants should be set apart for their production and the earliest and best fruit be allowed to ripen. The same rule applies in the flower garden. If we desire continued bloom, the plants must not be allowed to mature seeds.

Low against High Fruit Trees.

In horticulture, as in everything else, doctors disagree. We believe in low heads for fruit trees, especially in a hot climate, but there are those who do not. Well, we appeal to experience and here is that of a fruit grower in Illinois. He has 12,000 apple and from 4,000 to 6,000 pear trees, and finds that "those with low heads of the same varieties show at least two-thirds more fruit, as large or larger, and as high colored as those with high tops." To test the matter, he cut off in certain rows all the limbs from four to six feet from the ground, and in others encouraged the limbs to start close to the surface, and in the latter case neither thinned nor pruned, except occasionally to lop away a too lusty shoot in order to preserve a symmetrical appearance or an evenly balanced head; and the above is the result.

Applied Chemistry and Mineralogy.

All communications and notes of inquiry intended for this Department, as well as specimens of soils, fertilizers and minerals for analysis or description, should be addressed to Charles U. Shepard, Jr., M. D., No. 20 Broad street, Charleston, S. C.

Soils.—VI.

THE MINERAL NUTRITION OF PLANTS.*

By M. L. Grandeau, Director of the Experimental Station of the East, France.

M. Grandeau is well known as the Agricultural Chemist who was sent by the late Imperial Government to investigate the Agricultural Experimental Stations of Germany; and in consequence of his able and interesting report thereon, was chosen to fill the position of Director of the first similar institution in France. The present articles, the result of his first investigation and researches there, afford a happy omen of the future usefulness of the Station under his charge. M. Grandeau is also the chief critic and opponent of the views and pretensions of M. George Ville, whose name is so widely known throughout the Southern States. The writer proposes in this number of the Rural Carolinian to give an abstract

* La Nutrition minerale des vegetaux., L. Grandeau. Journal d' Agriculture Pratique, 1872. Nos. 13——20, 43, 45, 46, 48 and 50.

of Mr. Grandeau's new method of soil analysis, and perhaps in a future number to present his strictures on the views of M. George Ville.

Students of Agriculture are aware that chemists are divided into two schools, according to their views concerning the nutrition of plants. One school following the investigations of Th. de Saussure, maintain that the plant, under normal circumstances, feeds upon humus, i. e., that intimate combination of decomposed organic and mineral matter which is present in all more or less fertile soils; and that the fertility of any soil is, up to a certain degree, directly proportional to the amount of humus contained in it. Animal and vegetable matter in the soil, under the influence of air, moisture and heat, are subjected to a slow decomposition, which is in fact an oxidation. The terminal products of this decomposition are water, carbonic acid, ammonia (or under other circumstances nitric acid,) and those incombustible ingredients which form the ash. These inorganic compounds are likewise produced by the more rapid combustion, by fire, of the same material in the air. Where the decomposition is arrested, or where organic matter is present in all stages of oxidation, there results a partially decomposed mass, of whose immediate composition little is known, the laborious investigations of competent chemists notwithstanding. This ignorance is due to the mutability of the combinations under study; slight changes of temperature and the action of chemical re-agents being sufficient to rupture previously existing compounds, as also to induce material alterations in the form of occurrence of the ingredients.

The experiments instituted by the advocates of the *humus theory* have not succeeded in demonstrating that the rootlet of a plant can absorb those substances which by reason of their extraction from the soil, are supposed to form the connecting link between fresh organic matter and the products of the complete decomposition of the latter. On the contrary, it has been shown by Dr. W. Detmer, that neither potatoes nor oats can abstract these substances (humic acid, humate of ammonia, &c.) from their solutions. (Landw. Vers. Stat. 1871, No. 4.) Yet all practice appeared to warrant the views of this school, since it is well known that only those lands are fertile that possess a considerable quantity of humus, and that it is for the interest of every cultivator of the soil to promote its formation.

Opposed to these views is the so-called *mineral theory*, which was inaugurated and defended by v. Liebig. This school considered the veritable plant food to consist of inorganic matter, derived from the decomposition of mineral compounds and organic matter in the soil. Humus, accordingly, played no other part as a source of nutrition than that of affording by its complete oxidation, those inorganic substances before mentioned. Experiments have clearly demonstrated the possibility of raising perfectly healthy plants from aqueous solutions or calcined soils containing only inorganic matter, and utterly devoid of organic compounds. Thus did the plant show its faculty of absorbing out of the air, by its leaves, carbonic acid sufficient to furnish the carbon requisite for its combustible ingredients.

Such then was the aspect of the controversy at the publication of M. Grandeau's researches. From a number of soils examined by him, and the comparison of results, two are selected for the present paper.

1. A black soil from Russia, of apparently inexhaustible fertility, capable of producing *without the application of any manure*, in a three course system of rotation, with one year of fallow, twenty bushels of wheat and twenty-four of oats to the acre.

2. A sandy soil (from Serre, France,) of average fertility, capable of producing the same crops under the same system as the above, but *only on the application of ten tons stable manure to the acre.*

The ultimate analysis of these soils gave:

In 1,000 parts air dry soil.....	Organic Matter.	Phosphoric Acid.	Potash.	Lime.	Magnesia	Nitrogen.
1. Naturally fertile soil from Russia.....	71.0	2.00*	2.50	5.20	0.5	2.60
2. Artificially fertile Soil from Serre.....	110.0	2.10	11.30	1.00	4.10	3.00

Comparing these analytical results, M. Grandeau writes: "As one sees these two soils possess a nearly equal richness in phosphoric acid; the inferior soil, that from Serre, contains even a little more phosphates than the black earth, and it holds four times as much potash, more nitrogen, and yet what enormous difference between the two soils! The one without any manure, permanently produces, crops which can be attained with trouble on the other, by the use of much manure." He saw at once the necessity of some other method of analysis; and success crowned his endeavor to discover a process that should afford an index for the fertility of soils. Without entering upon a detailed statement of this method, since this would involve a lengthy article, it seems proper to give the following results of his investigations.

1. That the humus (an intimate union of combustible and incombustible matter) is present in the soil in a state of combination with certain bases, especially lime, and may be extracted by the following process: a. A preliminary treatment with exceedingly dilute hydrochloric acid, which dissolves such connection, and extracts the lime. b. A thorough washing of the soil with strong ammoniacal water, which extracts the humus, and thus decolorizes the soil. Weaker re-agents than hydrochloric acid, as oxalic acid and carbonate of ammonia, are sufficient to liberate the same substance, but the lime which was united with it, is not thereby extracted.

2. This ammoniacal extract evaporated to dryness, (on a water-bath,) leaves a dark, lustrous substance, Grandeau's "*matière noire*," or humus in the wide sense. The solution of the "*matière noire*" does not give the usual reactions for the fixed ingredients contained in it, hence they may be supposed to be in a state of combination with the combustible portion. After its combustion by fire, the solution of the ash behaves towards the customary re-agents in the ordinary manner.

3. The amount of humus in any soil stands in a direct ratio to its fertility; and the greater the amount of the combustible and incombustible ingredients extracted by M. Grandeau's process, in proportion to the total amount of organic matter

*In Grandeau's published table 1.60, which the writer regards as a misprint for the above.

and fixed constituents, as determined by the ultimate analysis of a soil, the greater is the nutritive value of its plant-food. This is shown on the two soils previously mentioned.

In 1,000 parts Air-dry Soil.

No. 1. Naturally fertile from Russia.	Organic matter.	Fixed Ingredients.	Phosphoric Acid.
Extracted by ultimate analysis	71.0	868.1	2.0
Extracted by Grandeau's method	20.4	21.6	1.7
Plant-food as yet undecomposed	50.6	846.5	0.3

1,000 parts Air-dry Soil.

No. 2. Artificially fertile from Serre.	Organic matter.	Fixed Ingredients.	Phosphoric Acid.
Extracted by ultimate analysis	110.0		2.10
Extracted by Grandeau's method	8.2	12.0	0.08
Plant-food as yet undecomposed	101.8		2.02

These results exhibit the vast difference between the quantities of total organic matter, fixed ingredients and phosphoric acid, as determined by the ultimate analysis and the amounts of the same ingredients as obtained by M. Grandeau's process. In the case of the naturally fertile soil, 5-6th of the phosphoric acid is combined in the humus, while in the one artificially fertile, only 1-25th is in that condition. M. Grandeau has been able to show by the results of a large number of soil-analyses, that the amount of the "*matière noire*," (and the quantity of phosphoric acid, potash, &c., contained therein,) is a practical guage of the fertility of a soil.

4. The incombustible ingredients are so combined with the combustible, that the union between them is severed when the solution of the humus, comes in contact with a vegetable membrane. The incombustible ingredients readily pass through the membrane, but none of the combustible. The solution of the fixed ingredients which have traversed the membrane, gives the ordinary reactions for these substances; thus proving that the organico-mineral combination is broken up.

5. As the vegetable membrane has its counterpart in the rootlet of the plant, the experiment demonstrates *that the inorganic ingredients of humus are the veritable plant-food;* while *the combustible portion serves only as the vehicle for the assimilation of the former.* This latter portion can be rendered assimilable only, after its complete decomposition into inorganic forms.

5. The loss of humus in soils diminishes its power of absorption. As is well known, a normal soil has the faculty of abstracting from their solutions and retaining in itself considerable quantities of the valuable ingredients of plant-food, as phosphoric acid, potash, &c. When a soil has been deprived of its "*matière noire*" by M. Grandeau's process, it loses this most important property. The

importance, then, of maintaining a large amount of humus in the soil, as well as of stimulating its decomposition, needs no elucidation, more especially as it agrees with the experience of all practice.

M. Grandeau has shown the possible harmony of the humus and mineral theories. The true plant-food is the inorganic compounds in the soil, (v. Liebig's theory); and the vehicle for their assimilation is humus in the narrow sense, whose value under all normal circumstances, is clearly established, (humus theory.)

The writer has completed a number of comparative soil-analyses by the two processes, (the ultimate and M. Grandeau's); and will be able in a succeeding number of this journal to publish some of them. Meanwhile, he stands prepared to execute for planters or Agricultural Societies, analyses of soils by this exceedingly interesting method, which promises to render agricultural chemistry, more than ever before, subservient to the needs and welfare of the community. S.

Laboratory for Analytical Chemistry, 20 Broad St., Charleston, S. C.

On Masses of the Carbonates of Ammonia found in Cargoes of Guanape Guano.

In number VIII, page 469, for May, 1870, of this Journal, I described the various distinct substances, viewed as mineral species, found in the guano-beds of this island. More recent cargoes from the same locality show some changes in the character of its production, worthy of being made public. The most important of these is, that the average per centage of ammonia has increased from 20 to 30 per cent., a fact doubtless owing to a deeper penetration of the guano-beds, whereby older and denser masses of the material are reached, in which the chemical transformations of animal matter have been more fully completed. The most recent importations not unfrequently embrace considerable lumps and cakes of the white and pure mixed carbonates of ammonia. As these were quite new to me, I have taken the trouble to examine them with considerable care.

Some of these masses are from six to eight inches or more in diameter, by three to four in thickness, and apparently proceed from the breaking up of a regular stratum or vein in the formation. The masses on being broken across, are seen to be mainly composed of two varieties of the carbonate, one a firm, white, granular salt, resembling loaf-sugar in structure, the other a yellowish brown one, traversing the first in crystals and columnar masses; the crystals and fibres being situated perpendicularly to the flat surfaces of the cake, and constituting more than half its bulk. The crystals and fibrous prisms are easily separated from the inclosing granular variety, as also from each other; and are exceedingly brittle and fragile, though their initial hardness is slightly greater than that of gypsum. The crystals often above an inch long, are deeply channeled, or striated oblique prisms, but too imperfect for admeasurement. They possess however, a series of parallel, highly oblique cross joints, in which directions, they readily afford brilliant cleavage planes.

A second cleavage also shows itself meeting the former under an angle of 111° 30, so as to form dihedral summits to the prisms. These cleavages being dissimilar, and unaccompanied by a third except in traces, it seems probable that the primary form of this species is a doubly oblique prism.

When exposed to the air, they remain for days almost unaltered, not yielding any sensible odor of ammonia. Nevertheless, they gradually lose weight, and some of their translucency also, by this exposure. Heated in a glass tube, they readily part with an abundance of water, and evolve the ammoniacal smell. Heated in an open platinum capsule, they rapidly waste away; and when reduced to about half their bulk, become coated with a black powder, which as the heat rises, momentarily glow, leaving a small white crust—like residue, equal to 4.6 per cent. of the material employed. Water dissolves a very little of this residuum, and the solution is found to contain sulphate of lime, and chloride of sodium. Nitric acid takes up the undissolved portions, attended by a slight effervescence,—the solution thus formed, consisting almost wholly of phosphate of lime, mixed with a little nitrate of lime, derived from the decomposition of the carbonate in the original crust-like residue. This carbonate of lime however, is believed to proceed from traces of oxalate of lime present as an impurity in the crystals.

Five parts of water at 70° dissolved one part of these crystals, attended with some extrication of carbonic acid gas, the escape of which became rapid on raising the temperature to 100.° The solution was complete except 4.5 per cent. of a fine cinnamon colored powder, consisting of the foreign matter doubtless, which in the above experiment yielded on ignition the 4.6 per cent. of white crust. This brown matter is plainly the source of color to the crystals.

The crystals are insoluble in alcohol. By analysis they afforded:

Carbonic Acid, (the mean of three trials)	52.14
Ammonia*	21.18
Water, (estimated by difference)	22.08
Foreign matter (already explained)	4.60
	100.00

The composition of the salt is, therefore, shown to be that of the acid carbonate of ammonia, commonly called the bi-carbonate of ammonia. Its chemical formula is NH^3 2 CO^2 + 2 HO, or carbonic acid 55.69; ammonia 21.53; water, 22.78.

The white, saccharine gangue of these crystals has essentially a similar constitution, but instead of the brown impurity above described, it is to a small extent, mixed with the sesqui-carbonate of ammonia, from which however, it has a tendancy to free itself by exposure to the air, through the escape of ammonia. It thus in a few days becomes a mass of weakly coherent crystalline grains of the bi-carbonate of ammonia. These grains or crystals are highly persistent unless in a humid atmosphere, and when dry cease to evolve the ammoniacal odor. When heated they entirely evaporate. They are insoluble in alcohol, and soluble in

* The ammonia determinations referred to in this paper were made by Dr. W. D. Wamer.

water like the first mentioned variety, the solution yielding as in that variety, carbonic acid gas. Its analysis gave:

Carbonic acid	56.80
Ammonia	20.53
Water (by difference)	22.67
	100.00

The conclusions formed therefore, concerning these mixed carbonates, are the following: 1, the yellowish imbedded crystals consist of a somewhat impure hydrated bi-carbonate of ammonia; 2, the white granular portion, for the greater part, has a similar composition, with the exception of the brown foreign matter; 3, but, intermingled with the white granular portion, there exists a variable proportion of the sesqui-carbonate of ammonia, which, when free from moisture, is largely present, and probably contains in solution some of the normal carbonate—the two latter compounds giving rise to the pungent ammoniacal odors afforded by these masses.

The description of the mineral called Teschemacherite by Dana,* appears to refer to some condition of the aggregate here described. I propose restricting the name hereafter to the two first varieties, while I would suggest that the name carb-ammonite, given by me in 1852,† to Teschemacher's aggregate, be henceforth applied to the sesqui-carbonate of ammonia.

CHARLES UPHAM SHEPARD, Sr.

Balsamite, a New Species of Mineral Resin.

I described two years ago in No. V., page 311, of this journal a new fossil resin (Ambrosine) found in the phosphatic nodule-bed of this vicinity. I have now to point out an allied species, specimens of which have been sent to me by Mr. J. Alden Smith, Assayer and Territorial Geologist for Colorado. In his letter from Central City of July 31, 1872, without stating its precise locality, he calls it the Shomaite mineral resin; and observes that he has been able to obtain it in small pieces only, diffused through thin seams of coal. Nothing is said of the geological age of this coal; but as the resin contains fibres of true brown-coal-lignite, I infer that the formation is post tertiary.

The specimen received evidently once belonged to the trunk of a tree of the Coniferous family. The ligneous fibres present, retain their original position, revealing most perfectly the concentric and radiating structure of the wood. The very slight curvature of the concentric layers in the mass proves, that the diameter of the tree must have been at least several feet. In substance, the specimen is quite dense, and in places, translucent. Its color is yellowish brown; and on the whole closely resembles a section of wood cut from ordinary pitch-pine, or light-wood. At its immediate surface, it is slightly brittle, but within is tough and wax-like. It is easily pared by the knife—the shavings, however not being adhesive, or attaching themselves to the blade. Its specific gravity is 1.12

*See his Mineralogy, p. 705. †See my Mineralogy, p. 66.

On handling, it emits a feeble balsamic odor. At 120 to 150° it becomes somewhat soft; but does not fully liquify short of 250°. At 300° it gives off smoke, attended with an odor resembling that afforded under similar circumstances, by styrax or liquid amber. Litmus paper held in this smoke is slightly reddened. The heat being maintained, it wastes away about one-half, when its consistence becomes tarry, and upon a farther increase of the heat, it breaks out into a bright flame, and is reduced with the odor of burning lignite to a perfectly white ash.

By distillation in water, drops of a pale yellowish white oil pass over, and fall to the bottom of the water contained in the receiver; but these soon after partly mix with the water, and rise to form an oily pellicle at its surface. The neck of the retort is also lined with a semi-fluid transparent oil, that loses its fluidity at about 100°. More than half the weight of this balsamic resin appears to be volatile at and below 250°. Its proximate composition is doubtless that of some acid, in combination with several of the paraffine group of compounds.

When separated, from the lignite it is soluble in ether and alcohol: 400 parts of the latter taking up 83.5 parts of balsamite, and leave 16.5 of cinnamon, colored shreds and fibres of lignite. These on being heated in a platinum capsule, burn with the bright flame of brown-coal to a white ash, in weight equalling only 0.25 per cent. of the original resin. This ash consisted of silica, carbonate of potash and lime, with traces of sulphuric acid and chlorine.

As a mineral species—balsamite belongs to the hydrocarbon—group, and stands chemically nearest to the species retinellite.

CHARLES UPHAM SHEPARD, Sr.

Reply to David Dickson of Sparta.

In your last number, Mr. Dickson takes issue with me on several points, which I desire briefly to notice.

I stand corrected as to his consulting a chemist about plaster and potash, (not salt and plaster, as he says.) I remember the fact that Mr. Dickson wished to use potash on his lands, and was informed by chemists, or learned it by his own experience, or from reading, that it would not do to mix it with Peruvian Guano. He then had a mixture of plaster and potash, (10 per cent. of the latter to 90 of the former,) which he applied on his lands. I tested this mixture on red land near Sparta. The first year it paid nothing. The second year it did much better, owing, no doubt, to the fact that it had by that time formed a union with carbonic acid and thus become assimilable.

In reference to this experiment, Mr. Dickson said that it was worth 100,000 dollars to the planting interest, as it showed clearly, among other things, that good guanos would pay a good per cent. the second year.

The great difference between M. Ville's formula and Mr. Dickson's, is that the former used the neutral phosphate of lime, and the latter the bi-phosphate, (dissolved bones.) As however M. Ville has recently changed his formula to the acid phosphate, we have nothing to say on that point, only that with this change, (as Dr. Smith's experiment shows,) there is a vast improvement in results. The old

formula, (the only one which I ever opposed,) utterly failed in my own hands, on cotton, because the phosphate of lime was in an insoluble condition.

Mr. Dickson says that "a heavy load of bolls early, will make cotton rust on thin sandy lands from exhaustion, if not well sustained with a good fertilizing compound."

My experience and observation leads me to change this proposition thus: "A good fertilizing compound will produce a heavy load of bolls early, and if there is not a plenty of vegetable matter in the soil will make it rust, especially on thin sandy land."

I agree with Mr. Dickson, that guano is suitable for cotton on grey land if it has a clay foundation. Much of his land has this important principle, but I wrote of the great mass of lands in Southeastern and Southwestern Georgia, when the clay is absent, and guano has generally proved a failure, at least does not act as favorably as on red lands. I know the fact, that farmers in the white lands of Georgia have, to a large extent, abandoned the more *stimulating* fertilizers, and I venture that the commission merchants of Macon will bear me out in the assertion, that they do not sell one-fourth as much guano to farmers who cultivate that class of lands as they did three years ago, while in all the red land section the trade was greatly increased.

Mr. Dickson says, "there is no such thing as stimulating plants," and yet he admits that they will die from exhaustion or rust. Has he never seen a plant hang its head under a burning sun and lack of moisture, and yet a cloudy day would revive it, *stimulate* it, or a shower would make it hold up its head, before it had time to receive a particle of nourishment from the effects of the rain. If a plant can become faint or exhausted, and be revived again, then it can be stimulated, and this may be done either by food, (for food stimulates sometimes as well as nourishes,) or by stimulants that do not nourish them in the least.

What causes a man who is hungry and depressed to feel so strengthened and revived after eating? It is the stimulous of food, not its nourishing qualities, because it never performs this function until after digestion takes place, and the chyle is separated from the chyme, which is a slow process, and plants are stimulated, I doubt not, by fertilizers, warmth, moisture, and genial sunshine, just in the same way.

Plants perspire, or have a system of exhalation going on, water exuding from their pores like man. And Boussingault found, by an actual experiment, that whenever this transpiration ceased the plant ceased to grow; where it was most active, it grew most rapidly. It is clear to my mind that certain conditions of the atmosphere, as low temperature produces this unhealthy state, and ammonia not only feeds a sickly cotton plant during such weather in the spring, but gives it vigor to brave the season, and grow in spite of the weather.

Liebig says, "the organs developed from a grain of wheat, weigh altogether when dried, no more than the grain did before germination." Then there was no increase of nourishment to make it germinate and expand, but simply the stimulous of moisture, warmth, etc. He says again: "On the approach of warm weather all the operations of life in cereal plants are *quickened*, and the quantity of food

daily absorbed and worked up increases, etc. If plants can be quickened, made more active, they certainly can be stimulated.

In an experiment made by Boussingault, the weight of the plants produced was nearly three and a half times greater than that of the seeds sown, but the quantity of nitrogenous matter was the same as in the seeds. Liebig says that this experiment is well adapted to remove all doubt about the very important power possessed by the nitrogeneous matter, (ammonia,) of maintaining the vital process in the plant, even where the mass of the plant itself receives no increase." If this be true, ammonia *maintains the vital force* without nourishment under certain circumstances, then it must be by stimulation. E. M. PENDLETON.

Athens, March 11th, 1873.

Natural History Applied to Agriculture.

Specimens of insects, securely packed, (according to instructions given in The Rural Carolinian, for April, 1872,) with letters of inquiry, entomological notes, etc., should be addressed, (post paid,) to Mr. Charles R. Dodge, Washington, D. C.

The Chestnut Weevil.

How very annoying, when enjoying a handfull of chestnuts, to bite suddenly into the home of a fat grub? Probably, in the majority of such cases, the unlucky mouthful is got rid of without further thought on the subject; but, doubtless, at some time or other, when gazing at the fat, footless grub lying snugly ensconced within its burrow in the centre of the chestnut, some of us may have desired to know something of its past and future history. The insect, in its perfect stage, is a beetle, known to science by the name *Balaninus nasicus*, or the long-snouted nut-weevil.

They are not only found in chestnuts, but acorns, hazel-nuts and hickory nuts are known to be attacked by them, and doubtless many other kinds.

The beetle is about three-tenths of an inch in length, exclusive of the snout, which is longer than the whole body, very slender, resembling a slightly curved bristle, is polished brown, and bears the usual elbowed antennæ, which are as fine as hairs. The general form of the insect is oval, the color dark brown, but the short hairs with which its body is clothed, and which are disposed in spots on its wing covers, gives it a rusty, yellowish appearance.

Harris mentions finding specimens paired on a hazel bush in July. Fitch states that they appear in July, and again in September, and gives their natural history, and the manner in which they injure hickory nuts, as follows:

"The weevil, with its remarkably long and slender beak, drills a hole in the nut when it is young and soft, and places an egg therein, the worm from which feeds

upon the meat, causing the fruit to fall. The worm finally bores out of the nut, and buries itself in the ground to pass the pupa state, and the beetle appears in July."

The diseased hickory nuts show a small discolored spot upon their outer surface, and when examined with a magnifying glass, a small hole is seen in the centre. The grub, of course, feeds upon the meat in the interior of the nut, filling the cavity with brown and whitish grains in which the insect may always be found lying. They are said to remain in the nut over one season, and not come out to change till the next year.

Answers to Correspondents.

Cocoon for Name.—A. E. W., Chester, S. C., writes as follows: "I herewith send you what, from early childhood, has been an object of interest and enquiry to me. The neat little box, with its closely fitting lid, securely attached to some twig, seemed so much like a work of art, that I desired to find out the little architect, but never could catch him at home, or at his work." The letter enclosed one of those singular little cocoons made by the larva of *Logoa opercularis*, a caterpillar about an inch in length, covered with short, brownish hairs rising to a ridge along the middle of the back, sloping off at the sides and ends, and so flat on the under side that, as it rests upon the leaf before you, it resembles a little mass of fur. It lives on apple, blackberry, oak, plum, sassafras, sycamore, &c., and in September constructs its cocoon, which is a little over half an inch in length, and always attached to a twig or branch, so that one side is somewhat flattened; the other is rounded, and so smoothly, and so closely resembling bark that it might easily be taken for an outgrowth of the tree, and the similarity is heightened by the semblance to a *bud*, which is invariably found on the rounded portion. The lower end is neatly tapered off, but the most curious feature of all, is the upper or open end, which is formed with a lip or turned edge, and as perfect a fitting lid, working on silken hinges, as could be imagined. The pupa is formed within the cocoon, which is always covered with a fuzzy substance on the outside, and the perfect insect does not come out till the following Spring; so it will be seen that our little architect needs a warm house to protect him from the winter's cold, and his instinct, doubtless, teaches him that so perfect a mansion is not complete without a door.

The Cattle Bot Fly.—A. H., Oakland P. O., sends a vial of insects taken from the back of a small ox, and says: "They are contained in lumps, on the top of which there is a small opening, and by pressing the sides of the lump the grub will pop out. These lumps are commonly called *wolves*."

The insects came in good condition, and are fine specimens of the larvæ of the above-named insect.

The eggs are deposited on the backs of the cattle from June to September, but the manner in which they are deposited is a matter of dispute, some writers averring that the females pierce the skin with their sharp, gimlet-like avipositors, de-

positing the egg in the wound, while others claim that the eggs are merely placed upon the skin, and that the larvæ work themselves in. Whichever way it may be, the cattle seem to find little enjoyment in it, for they run about in the wildest manner, and have even been known to go into the water to get away from their tormentors.

As the larvæ grow they increase the size of the burrow, but always keep a small hole open at the top for supplies of air. Thus, the adjacent parts are kept inflamed and irritated, forming tumors or abscesses on the matter from which the insects live. The larvæ is provided with numbers of hooks pointing both backward and forward, with which it moves about, and, doubtless, they do their part towards keeping up the inflammation. We noticed in the bottle of specimens sent a few brownish larvæ, although the greater number were white. This gradation in color is due to the difference in the age of the specimens; when young they are always white, but at maturity they are a deep brown; this occurs from May to July. The insect is now about an inch long, and as it is ready to change it works its way backward out of the hole, falls to the ground and immediately transforms to a pupa, in the old larval skin. The sores then heal very rapidly.

The insect remains a pupa for a month to six weeks, and then comes forth a large fly "densely covered with hairs, except upon the thorax, which is partially naked and black, broadly banded with white and yellow. The abdomen is banded alternately with yellowish white and black, and with reddish orange at the end. The front of the head is dirty ashen, with yellowish white bars." We have never seen the perfect fly, and so are indebted to Prof. Verrill for the above description of it.

Although these insects are quite troublesome to the cattle, they do not cause any permanent injury. They can be pressed out of their burrows with the thumb and finger in the manner in which you obtained the specimens forwarded, the only care to be taken is to get them out entire.

We do not know how to account for your statement that they only attack the *leanest* cattle, as it has always been understood that young, healthy and fat animals were particularly subject to their attacks, probably because the skin is more easily pierced.

The flies are found most abundant on the uplands in the vincinity of trees, avoiding wet and damp localities, so that cattle pastured in meadow lands are most free from their attacks. It is named *Hypoderma bovis*, of Latr.

A Suggestive Statement.—The writer in the *Plantation* quoted in a preceding paragraph, (Mr. Davis,) says:

The farmers who are thriving here beyond all precedent, in this part of the country, are the men of small capital, who work and superintend the working of their own land; *who increase their working force from year to year, without the aid of factors or moneyed men.* Such is the class of immigrants we want, and such we will have in due time.

Hybridization in Plants.

Is Hybridization among plants mediate or immediate in its effects? Does it produce so marked an influence on the fruit and seed directly as to be seen and appreciated, or is its effect latent in the first generation, and only coming out in the future progeny? These are questions which are under discussion by horticulturists, and there are certain facts which seem to prove that both kinds of effects may be produced, sometimes the one and sometimes the other.

We all know that peaches, pears, apples, grapes, and other fruits grow together in their different varieties, and still bear fruit true to their kind, and that the effects of this natural crossing are not seen until new varieties are raised from the seed.

We often see melons from good seed so decidedly *squashy* in texture and flavor as at once to suggest crossing, but this crossing may have taken place in a previouus generation, and only now showing itself.

On a plantation in the lower part of this State there are several large trees of the Pecan nut (*carya olivæformis*), with trunks four and five feet in diameter. The tradition is that the nuts were brought from the Yazoo Valley over a hundred years ago, and they are called "Mississippi nuts." These trees have annual crops of rich and perfect fruit. Being a favorite nut, persons in the neighborhood had long ago tried to propagate them from the seeds, and many of these seedling trees have been in bearing for thirty or forty years. It was found, however, that more than half the trees thus raised from seed were worthless, the nuts varying not only in outward appearance from the true Pecan, but having dry, astringent flesh like the bitter pig nut. In fact, the nuts of these trees resembled those of *C. aquatica*, much more than the parent. Some few, however, bore the true Pecan. This became so well known that people rarely attempted to propagate by seeds. I have seen these trees and the nuts they produced, and have always been disposed to attribute the effect to hybridization with our water pig nut, common in the swamps around. Hence the effect is latent in the first generation and only come out in the second, like that of our common fruits. I have never heard of these hybrids being found in the wild state.

There are certain other facts, however, which seem to prove that hybridization is sometimes more direct in its effects, and produces a visible influence on the fruit and seed of the first generation.

A year ago I had in my garden two varieties of Indian corn—the sugar corn, with its shrivelled, semi-transparent grain, and the Tuscarora, with smooth, white and rounded grain—growing and tasselling about the same time, though not very near to each other. On harvesting the sugar corn left for seed, there were some ears true to their kind, whilst others had mixed grains, showing both kinds. This is strong presumptive evidence in favor of immediate hybridization, as seedsmen are generally very careful in keeping garden varieties pure and unadulterated.

I once witnessed the effects of crossing upon cotton, which seems conclusive of its direct influence upon the seeds and fibre of the first generation, and illustrates,

also, the facility with which different varieties of cotton will impregnate each other. It occurred over twenty years ago, and happened in my own field and came under my personal observation. On a plantation in which Sea Island cotton was cultivated, I planted a few acres of Nankin cotton. The former is a variety with clean black seed and long silky fibre, the latter with short yellow fibre and green tufted seeds. I used the precaution of planting the Nankin cotton as far as possible from the white Sea Island, at least ¾ of a mile, to avoid crossing. In the fall, when the crop was harvested, a large quantity (several hundred pounds) was picked out of the Sea Island variety, which had evidently been adulterated by the Nankin cotton. It was found of various shades, from the light cream to the yellowish brown color of the Nankin. The samples also varied in texture from the long silky fibre of the one to the coarse and shorter wool of the other. The seed also exhibited a succession from the green tufted covering to the naked black seed. In harvesting the crops of the neighboring farms, some of which were fully a mile distant, several samples of Nankin cotton were also found. This was the only field of Nankin cotton in the neighborhood, and of course the adulteration was produced by it, most probably by the intervention of winged insects passing from one field to the other, and carrying the pollen dust from flower to flower.

H. W. RAVENEL.

Plants Producing Spices and Condiments.

[*See Frontispiece.*]

Cinnamon.—The cinnamon of commerce is obtained from a tropical tree (*Cinnamonium Zeylanicum,*) Fig. 4, cultivated in Ceylon, and elsewhere in the East, and also in South America and the West India Islands. It is prepared by stripping the bark from the branches.

Clove.—Cloves are the unexpanded flower buds of a small evergreen tree, (*Caryophyllus Aromaticus*) a native of the Moluccus, but cultivated in several parts of the East and in the West Indies.

Cardamon.—Cardamons are the seeds of several low growing plants, with creeping roots, natives of India.

Allspice.—Pimento, allspice or Jamaica pepper, is obtained from a beautiful West Indian tree (*Eugenia Pimenta*) extensively cultivated in Jamaica.

Nutmeg.—The nutmeg tree (*Myristica Moschata*) Fig. 2, is extensively cultivated in tropical regions. Its fruit is very much like a peach, having a longitudinal groove on one side and bursting into two pieces, when the inclosed seed, covered by a false *aril,* (coating) which constitutes what is known as mace, is exposed. The seed itself has a thick outer shell which may be removed when dry. The nucleus or body of the seed is the nutmeg of commerce.

Black Pepper.—The pepper plant is a shrubby, climbing vine (*Piper nigrum*) a native of the tropics and cultivated in the East Indies, West Indies and South America. The fruit is gathered before it is fully ripe and dried in the sun. White pepper is the same fruit, permitted to remain on the tree till more fully matured.

Ginger.—This well known spice is furnished by the creeping stems (rhizomes, popularly called roots,) of the *Zingibar officinale*, Fig. 1, which is much cultivated in tropical and semi-tropical countries. The ginger plant has been grown in Florida and might, perhaps, succeed still further north.

Liquorice.—The liquorice plant is a native of the South of Europe, and would doubtless thrive in the Southern States. It is a herbaceous perennial, and is propagated by root-slips. It is cultivated mainly in Spain and Italy.

Vanilla.—The vanilla of commerce is the seed pod of *vanilla aromatica* and *V. planifolia*, climbing orchids of South America.

Caper.—The caper plant (*capparis spinosa,*) Fig. 3, is a native of the South of Europe. It is a creeping plant and the flower buds are the parts used for pickling and known as capers. It can be grown with success in the South Atlantic and Gulf Coast regions.

Bermuda or Joint Grass Again.

In the March number of RURAL CAROLINIAN, your correspondent R. C., questions the identity of "Joint Grass" and Bermuda Grass. Both of these names I gave as synonymes of *Cynoden Dactylon*, a grass well known from Virginia to Texas, and passing under one or the other name all the country over. I suspect R. C.'s "Joint Grass," with reddish tender roots, is a species of *Paspalum*, which grows in wet soils, and is one of the plagues of the rice planter. It has the local name of joint grass along the sea-board.

This confounding of different things under the same name is only another proof of the necessity of knowing the botanical name, in order to understand what is really meant.

If R. C. will, in the summer, send me a specimen of his "Joint Grass," with flower stems and roots, I will endeavor to set it right.

The Bermuda Grass is not a variety of Kentucky Blue Grass, as he suggests, but belongs to a different genus. H. W. R.

Crops and Labor in Alabama.

EDITOR OF THE RURAL CAROLINIAN: The people here are all at work in earnest, planting corn and preparing for cotton. There has been rather more small grain sowed last fall and this spring than usual. Of corn, about the same; cotton fully as much as last year, if not more, except an occasional plantation lying out for the want of funds or labor to work it.

There will be a great effort made to plant earlier this year than last, for fear of the drought we had at last planting, and also to "head off" the worms. Labor is scant, but I think the laborers are doing as well, if not better than usual. Much of the best and strongest labor has left this County for western cotton fields, and it is said that many even have gone to Kansas, lured there by the promises of high wages and free transportation. Don't discontinue your "crop outlook" column.

Near Mount Meigs, Ala. J. C. N.

PATRONS OF HUSBANDRY AND AGRICULTURAL SOCIETIES.

Our Order as a Social and Educational Institution.

To buy flour and bacon more cheaply; to sell cotton with more profit, and to realize economies in all legitimate ways; to promote cash transactions and to simplify all business operations, are by no means unimportant objects, and Granges of Patrons of Husbandry are perfectly right in making use of the facilities which their organization affords for attaining them. In doing this they are not subverting the laws of trade or seeking to injure any class engaged in legitimate trafic. They are simply doing what any wise and thoughtful individual, who requires large supplies and has cash in hand with which to purchase, or who has anything to sell in quantity and can choose his own time and mode of disposing of it, would do. They buy for cash and they get everything as near where it is produced as they can, to save the profits which must otherwise be absorbed by intermediaries; and the same in selling. It is one of the laws of trade that a person will sell where he can sell dearest and buy where he can buy cheapest. That is just what all sensible traders do.

While, therefore, we should not ignore the pecuniary benefits of the Order, we shall make a great and in the end a fatal mistake, if we take these to be the sole or even the principal ends of the organization. By making it a mere co-operative trading association, we should degrade it, and in degrading should kill it.

The Patron who can see nothing in our noble organization beyond the means of directly gaining or saving a few dollars has yet to learn the first principles of the Order. The Grange is primarily a social institution—a bond of union and a guarantee of good fellowship and kindly fraternal feeling. It brings together in its meetings the fathers, mothers, sons and daughters of the neighborhood, all of whom are bound together by ties far stronger than those of mere neighborly feeling; and here they are constantly reminded, by the beautiful ceremonial of the Order, of their obligations to be kind, charitable and mutually helpful.

The meetings of the Grange are essentially and necessarily potent educational instrumentalities. The Grange is (or should be, in all cases,) decorated with flowers and adorned in every practicable way, to encourage a love of the beautiful and promote taste and refinement. The ritual impresses upon the mind the highest moral principles and the purest code of social intercourse. We address our officers with the title of "Worthy," with due respect for their positions, and each member as a brother or a sister. In all these and in other ways we are involuntarily educating and elevating ourselves.

In the second place the Grange is a school for direct practical intellectual culture. It is the fault of its members if it is not made a good one. Papers should be read by the Lecturer and by others, and they should embrace not only planting and stock raising, but rural and domestic economy, household science, horticulture and

home adornment, so that the meetings may be interesting and useful to young and old, male and female.

The Order is not for to-day merely, but for all time. Let us continually remind ourselves and each other of the high aims it inculcates, keep it pure and make it a blessing not only to us, but to our children, and our children's children, to the latest generations.

To the Masters and Secretaries of Granges.

We are anxious to publish, for the convenience of the Order, and the information of the public, a full and correct list of the Subordinate Granges in South Carolina. Will the Worthy Master of each Grange, whether old or new, give us, (or instruct the Secretary to do so,) the name and number of his Grange, the names of the Master and Secretary, and the Post-office of each, and the County in which the Grange is situated.

With thanks to the Worthy Brothers who have reported as requested, we desire to call the renewed attention of those who have neglected it, to the foregoing notice. Every one will see the importance of a correct published list.

Organizing New Granges.

By a resolution adopted at the last meeting of the State Grange, the system of State Deputies was abolished, and the Lecturer of the State Grange made the sole organizing officer for the State. Those wishing to be organized, will therefore please address Dr. John A. Barksdale, Lecturer of the State Grange, Laurens C. H., S. C.

Miscellaneous Correspondence and Notices.

Cotton in Checks.

Editor Rural Carolinian: I jestingly promised Col. Aiken, last summer, if my experiments with Cotton were satisfactory, to tell your readers "what I knew about farming," but that if they failed, I would never mention it."

The experiments were not satisfactory, worked no demonstration, I have not received the instruction I expected, and, therefore, cannot impart it, but the thoughtful may find suggestions in the results.

At my residence in Kirkwood, I have a little sixteen acre farm which, for some years, I have been cultivating very profitably and improving inexpensively, it being ploughed exclusively by my carriage horses and worked mostly by my house and yard servants.

It is divided by ditches or fences into lots respectively, of three-and-a-quarter, three, two-and-a-quarter, four and, three-and-a-half acres. The preparation of all the lots was pretty much the same, all being well flushed, with seven inch turn plough and three sub-soil furrows run to the bed in drilled cotton, two to the

checked. The domestic manure used, cotton seed, stable manure and muck composted, about the same; about ten two-horse loads to the acre.

On the three acre lot this domestic manure was broad-casted and 200 lbs. of "Cotton Food" to the acre put in the checks, as I was satisfied from experiment in '71 that checked cotton had the tendency to grow too late and I desired to force it. See RURAL CAROLINIAN, February, 1872, page 243. The cotton was planted in checks on two acres 3x3, in one acre 3x2. Result 1107 lbs. per acre.

The three-and-a-quarter acre lot had the domestic manure placed in the drill, and 150 lbs. "Soluble Pacific" to the acre, planted four feet apart by one foot in the drill. Result 1181 lbs. to the acre.

The two-and-a-quarter acre lot in four feet rows, one foot in the drill, domestic manure as above, and 200 lbs. Cotton Food. Result 1130 lbs. to the acre.

The three and a half and four acre lots, sandy flats, inferior to the other lots, were planted in three and a half feet rows, manured in the drill with the same compost and two hundred pounds of cotton food to the acre, and produced respectively 800 pounds and 900 pounds to the acre. The competition was only with the first three lots, as these two last named are being slowly brought up.

I was disappointed in all of them somewhat, from the promising condition of the crop during the summer, especially as to the checked cotton, which promised beautifully, but grew too rank, bloomed and bolled excessively, but failed to mature well, though on sandy land, pushed by manure and rapid cultivation. The deficiency did not result from the fact that the stalks were fewer, for by the test of actual count the stalks produced each, generally, more than double the bolls than those in drills, but they failed to mature. I frequently counted on a single stalk 150 to 200 bolls, and counted on many as high as 40 bolls to the stalk, that rotted, were destroyed by the boll-worm, or failed to mature from excess of sap in the stalk.

The result of my experiments for some time prompts the conclusion that while excessive crowding, in sandy lands, will not answer, yet too much distance and broadcast manures delay maturity and impair the result, the better plan being to give full distance between the rows and to force maturity by pretty close planting in the drill and manuring in the drill also. HOBKIRK.

A Cheap and Effective Rail Fence.

EDITOR OF THE RURAL CAROLINIAN: I notice in your February number an article on planting, by "Low Middling," in which there is a sketch of a fence by Maj. Lartigue. I am afraid that such a fence, besides being practicable only near a saw-mill or lumber depot, would cost quite too much, besides requiring better carpentering than most laborers are capable of, unless it is used about a yard or lot.

I have been using for many years a much cheaper, if not more efficient one, especially for outside fences or for large fields. It is constructed with the ordinary (with us twelve feet long) rails and short pieces about two feet long. The course, as it is called, is laid in two parallel lines, about eighteen inches apart, allowing, if the rails are of uniform lengths, about six inches for lap, then a short piece is put across the two rails thus laid, then the next two rails on the short piece, but a little nearer each other, *i. e.* drawing the rails gradually together until the topmost rails lie alongside of each other, thus making the pannels wider at the bottom than on the top; then stakes are set with riders, as in the common worm fence. I have generally found that a fence six rails high, with stakes and riders, was not only a very effective fence, but it is rather inconvenient for persons even to cross. Some-

times this fence is made by driving at the joinings of each two pannels two stakes, a little higher than the fence is to be; the rails are then batted between these stakes, and small pieces placed between their ends to raise them apart, and when all the rails are placed, the tops of each two stakes are tied together with grape-vines or other material. Both of these kinds of fence are particularly suited to banks, although they will answer on level land. If the stakes are split seven or eight feet long, this fence of mine will look neat, as well as prove efficient and durable, but staking and ridering are absolutely necessary to keep up the first fence above. By this arrangement six rails, two short stakes and one rider, will make ten or eleven feet of fence. I have found it the cheapest rail fence that I have ever made. R. C.

Two Ploughs to One Mule.

Editor of the Rural Carolinian: To expedite the planting of my cotton last year, I resorted to a method, which I beg to communicate for the probable benefit of some of your readers. My plan is to attach two ploughs to one mule, thus securing from one the labor of two.

Arrange as follows: Having geared the mule as usual, take off the swingle-tree and attach each trace-chain to a plough-stock by running a clevis through the ring of the trace. The working position is thus: The mule walks in the water furrow, while the ploughs are pulled along the beds on either side. Thus arranged, one pair of ploughs opens the drills, the seed sowers come after, and are followed up by a second pair of ploughs covering with boards.

Of course, a ploughman is needed for each plough, but with one good hand to manage the mule, a small boy may hold or guide the other plough. The draught is very light, for the mule walks upon firm ground; and the plan will be of benefit to such of our farmers as may desire, with a small mule force, to push through the planting operation as rapidly as possible. W. B. C.

Winnsboro', S. C., March 19th, 1873.

An Experiment with the Cooley Corn.

Editor of the Rural Carolinian: Having received from the Department of Agriculture a package of Cooley White Field Corn, I planted it 11th to 15th March, 1872. The season was very unfavorable from excess of rain till April, and extreme drought after the 8th of that month. Planted in ordinary soil, with a sprinkling of ashes and superphosphate, and grown without extra cultivation, it was in roasting ear by the 27th of May, and the ungathered ears fit for grinding before 1st July. The ears were of good size and handsome, grain full and white, and commanded the best price in the market. Very few of the stalks produced less than two good ears. On account of its earliness, exceeding by four to six weeks that of any other field corn, known to me, with exception of the Peabody Prolific, it deserves, in my opinion, to supersede in this climate the numerous varieties, uncertain here, of garden or sugar corn, and where early maturity is an object may be confidently recommended for the field. A. J. WRIGHT.

Port Gibson, Miss.

———Do not neglect the sweet potato crop, and plant as early as practicable, to give the tubers the benefit of a long season of growth. It is not necessary to wait for a rain, or for cloudy weather, to set your slips or "draws." Grout them well in a thick batter of cow-dung, ashes, and black soil from the woods, and you may safely plant at any time.

Grapes and Grape Culture.

EDITOR OF THE RURAL CAROLINIAN: I notice in your valuable journal the communication of D. Z. Evans, Jr., of Maryland under the above heading, and as I read, I come to the question relative to his knowledge, and when he says "Grape culture to be remunerative requires experienced views from the beginning," I coincide with him, but when he says that "one season in the employ of a good vinter would develop more practical facts than a score of volumes on grapes," I feel like asking where is that intelligent practical vinter? I certainly would not trust Mr. Evans' surface knowledge, nor would I take the European viticulturist's knowledge. Neither of these growers have had practical knowledge of our native grapes, and to-day do not know the principles of association connected with climatic life.

F. R. ELLIOTT.

Notes on Planting—Erratum.

EDITOR OF THE RURAL CAROLINIAN: On page 290 of your magazine in my last article the types say: "There will then be of all ages about ten head of hogs and nearly *ten* head cattle to the mule. I do not know whether the mistake was in the MSS. or in the printer, but it should be "nearly *four* head of cattle," &c. Please note the erratum.

LOW MIDDLING.

General Notices and Acknowledgments.

Mr. F. E. Habersham, formerly of South Carolina, has patented a new Cotton Seed Planter, which seems to have some points of merit not possessed in the same degree by any other. We have examined the machine carefully, and are very favorably impressed with it; but not having seen its practical working in the field we are not at present qualified to speak more explicitly. A friend who has used it, however, is enthusiastic in its praise. It is claimed that one mule and one hand, will readily plant from six to eight acres a day with it. Owing to the construction of the machine, it is said to be impossible for it to choke, thus insuring a good "stand" of cotton, and by distributing the seed at equal distances, and not allowing it to "lump," it saves trouble in "thinning out."

Messrs. Adger & Co., of this city, will be pleased to show the Habersham Cotton Planter to those who may wish to examine it.

Few nurserymen, florists, or seed growers in this country, are more widely or more favorably known than Mr. John Saul, of Washington, D. C.; and his new "Catalogue, (No. 6,) of New, Rare and Beautiful Plants," is uncommonly complete, especially in desirable novelties, and particularly rare varieties. The beautiful colored plate of the new Japan Primrose, (noticed in another department,) will tempt every lover of flowers who can afford it—and we wish they were more numerous here—to buy plants. Mr. John Saul sends all his catalogues free.

"Notes on Planting—IV," was received too late for the present number, but will appear in our next. This series of articles is attracting much attention, and will, we hope, be carefully studied. They are based on the actual working of a plantation, as managed by the writer of them, one of our best middle country planters.

The New Catalogue of Fruitland Nurseries, (P. J. Berckmans, Augusta, Ga.,) is handsomely illustrated, and, as usual, full, complete and trustworthy—the best guide one can have in buying, bedding and Greenhouse plants, and flower and vegetable seeds for this climate. Sent free to all applicants.

We shall be pleased to receive from all parts of the South, specimens of valuable, rare, or curious seeds, plants, fruits, vegetables, and minerals that will serve to illustrate the productions and resources of our country.

Mr. L. Thompson, Liberty, Miss., has sent us a few seeds of his improved cotton, which we shall take pleasure in giving a fair trial.

Inquiries and Answers.

Barnwell. The small white or Navy bean succeeds admirably here, and can be made a profitable crop. It does not require rich land or heavy manuring. Nothing is better for it than a compost of chip manure or yard scrapings and ashes. Plant in hills or in drills, as most convenient, rows two and a half or three feet apart, and cultivate the same as the common dwarf kidney or snap-bean. Never work beans when wet. It causes them to rust. The difficulty and danger lie in saving the crop. If left too long in the field, either before or after pulling, the beans become discolored and unfit for market. They should be pulled before the pods are fully dry, and either cured under a shed or carefully stacked in the field, so as to be protected from rain. In either case, they should be threshed as soon as dry. Twenty bushels per acre would be a fair yield on light and moderately fertile soil.

———"Ruralist." To have a satisfactory lawn, (after getting a good "stand," on rich, deeply prepared soil,) you must cut the grass frequently. If you allow it to grow tall enough to make a good crop of hay, cutting it, especially if the weather should be dry and hot, will cause it to burn and destroy its beauty for the season. Sheep may be pastured on a lawn in winter, but not in summer, in this climate, as they will cut the grass too close, and cause it to become scorched or dry.

———"Subscriber," Bennettsville. Diarrhœa or "scours" in sheep often assumes a dangerous and even a fatal form. Give nothing but dry food, and keep the animals as quiet as possible. A drink made by steeping juniper berries in hot water, a gill at a dose, is a good remedy; so is a lick composed of pulverized oak bark and salt, with a little spirits of turpentine mixed with it. A mere change of diet often effects a cure.

———Miss R. desires a recipe for making Jujube Paste—the real article, from Jujube fruit, and not the imitation usually sold under the name. Any one who knows the process will please send it to us for publication.

———P. P. Gypsum seldom does any good on low wet lands. Dry clays and sandy soils are generally benefited. It seems, in most cases, to act like a charm on clover and the cultivated grasses.

———W. T. P." Hay Tea" is made by pouring hot water on cut or chaffed hay —clover is best—and is considered an excellent tonic for animals.

Literature, Science and Home Interests.

SWEET ARABEL.

While on this mundane globe I dwell,
No mind can think, no tongue can tell
How my affections round thee twine,
How my heart echoes love of thine,
And holds thee in its holiest shrine,
Fair daughter of my humble line,
Sweet Arabel.

When doubts perplex, and anxious fear
Assails my heart, thy words of cheer,
Thy winning smile and warm caress,
Thy gentle, thoughtful tenderness;
These all my doubts and fears repress,
And constitute my happiness,
Sweet Arabel.

In this cold world of sinful thrall,
Thy modest mien, I oft recall,
Thy tuneful voice and azure eyes,
From whose cerulean depths arise
The holy calm of Sabbath skies,
And gleams of fond self-sacrifice,
Sweet Arabel.

When thou art sad, the deepest gloom
Pervades my breast; no joys illume
My anxious soul, till by thy smile,
Thy prattling tongue and artless wile
Thou dost my weary hours beguile,
And driv'st away stern care awhile,
Sweet Arabel.

When o'er life's devious, darksome way
The thunder bellows, lightnings play;
Dear innocent, for thee I yearn;
To God, and thee for comfort turn,
From thy pure faith high wisdom learn,
And thro' the clouds some light discern,
Sweet Arabel.

Thou'lt think of me when I am gone,
And thou, dear one, art left alone;
Think how I clasped thee to my breast,
How oft to thine my lips were prest,
How by thy love my life was blest,
And my soul found in thee its rest,
Sweet Arabel.

God bless thee, keep thee, darling child,
From sin and shame and sorrow wild;
Keep thee in truthfulness and love—
Keep thee a guileless, harmless dove,
Till we shall meet in realms above,
And heav'nly joys forever prove,
Sweet Arabel.

In that blest clime we'll find surcease
Of toil and want; complete release
From care and pain, transporting thought,
The ransom that our Saviour bought
With His own blood, to us hath brought
A life with endless glory fraught!
Sweet Arabel.

W. Fletcher Holmes, M. D.

Barnwell, S. C., March, 1873.

BLUE AND GRAY.

A STORY OF THE LATE CIVIL WAR.

Were there a hundred veterans of the Army of the Potomac who never marched through Winchester, Virgnia?

One doubts it when the records of the war tells him that the town was captured twenty-three times during the war. It was "Yank" one month, "Johnny" the next, and the inhabitants got so at last that they dared not pronounce for either side, they claimed to be neutral, and only asked the soldiers in blue and the soldiers in gray to let their chickens alone.

If the last year of the war did not sweep it away, and the fire has spared it yet, there stands an old brown farm house, with a front yard filled with cherry trees, and a lot of mulberry trees growing up and shading the south end of the house. It is a cozy place for two old white-haired parents to sit on the front veranda and rock and dose in the sunshine, while a strong-armed son whistles cherrily in the growing crops.

I saw it thus once, and I saw it afterwards when the storm of war swept over and around it, staining the green grass to a red, and when passionate men and fiery horses swept through the fields and dashed at each other as the black smoke lifted for a moment.

One day, in the Spring of 1862, the dispatches said that the Confederates had been driven out of Winchester, and that the Union forces held possession. I was not with the victorious party, but a few days after, when the Confederates came back so close that they held half of the town and the Union forces

the other half, I went down with half a regiment of cavalry and a few battalions of the infantry to hold the ground.

Army operations had hardly commenced for the Spring, and the Confederates were determined to hold the line of communications open as long as possible. I had a heavy backing a few miles away, and knowing this, the Confederates only cared to keep me from advancing further than Winchester for the time being.

We had our pickets as thick as bees in the northern suburbs of the town, but the main force was back on the road, near the old farm house, where the ground offered better advantages in case of an attack. We had been in camp less than a day when I ascertained that the farmer's name was Hastings, and that he had one of the handsomest daughters in all Virginia. He asked for a property guard around his farm, and in seeing that the guard was properly posted, I had occasion to enter the house. There wasn't that bitterness then which came in after years, and we could all speak very freely without any fear of offence.

The farmer was old and weak, and when I found out that he was a firm believer in secession and rebellion, I had no angry or hot words to give in reply. Where should one look for Southern feeling if not in the homes of Southerners?

The wife was old and feeble, and the son away in Richmond, and it was natural enough that I should make up my mind to stand between the beautiful Kate Hastings and the inconveniences of war as much as I could.

I don't think I violated any of the rules and regulations when I promised the family that their property should be preserved from raiders, and their personal liberties abridged only so far as the safety of my command required. Of course, I could not allow them to be passing back and forth between the lines, but they should be free to move in any other direction.

I tell you right here that I never saw a more charming, lovely woman than Kate Hastings. I lost my heart the moment I saw her, as any other man would. But I was not so idiotic as to believe that I had only to say the word in order to make her my wife; indeed, I very much doubted from the first if I ever should or could win her.

"I trust that we shall all be friends," she sweetly said, when I was about to leave the house. "It is a cruel war, deprecated by all for its wounds and griefs, and civilities from captors to captive will certainly always be appreciated."

There was an invitation to call whenever I had the opportunity, but there was that modesty and dignity in the lady's look and bearing which made her anything but a love-sick maiden to be easily won.

Well, we pitched our camp; had camp routine; changed pickets; skirmished with the Confederates, and things at length were so-so from one day to another. I sat on the veranda and smoked with the old man; I took tea with them; I read to Kate, and once in a while talked love, or was just going to when she would check me. She was thoroughly Southern in sentiment. I knew it, and therefore passed politics over for something more agreeable to both.

Finally the day came for Winchester to change hands again. A reinforcement of cavalry had come to the Confederates, and one day at noon they made the fact known to us. Our pickets came running in, fighting as they came, and closely followed by cavalry, and we had only time to form a battle line before the enemy was along our front.

We had a sharp fight for half an hour, during which time many a brave soldier bit the dust on either side, and then my command had to give way. We were hard pressed in front, and being flanked when the order was given to fall back slowly to the ridge half a mile north of the farm house.

As we fell back I saw that the old house had been torn here and there by shots, and fearing for the safety of the family we carried them along with us beyond the shots of their friends. All were badly frightened, and made no objections. Step by step, giving the enemy as good as he sent, we fell back to the ridge, and there we halted.

The Confederates came as far as the farm house and there formed their line and rested, throwing up a breastwork and mounting a cannon to command the road.

We threw up defences, formed a new line, and by sundown everything was going along as if no battle had occurred and a hundred men in blue and gray had not been sent to their long sleep. There was half a mile of neutral ground between us, and the pickets thrown out were hardly a stone's throw from each other.

An hour after we fell back the Hastings family came to me from a farm house where they had taken refuge. I knew that they wanted to return home, and was therefore ready for the old man's question.

"Of course you can go," I replied, though it pained me to think that I should lose Kate's society. "I only ask that you repeat after me an oath that you will not give your Confederate friends information concerning us."

They repeated the words, and we walked down to the picket. A hand-shake all around, and then they took their leave, and my air castles came toppling down. The chances were hardly one in a score that I should ever see either of the three again.

Having seemingly gained all they desired, the Confederates did not seek to drive us further. Several days passed without even a

shot from the pickets, when one day, to shake off the rust, I rode with two companies of cavalry, which were bound on a raid around the east of Winchester, to secure information concerning the strength of the enemy in that direction.

We had a long ride of seven or eight miles, when, coming to a fork in the road, the Major took one company and myself the other, and pushed up the forks. We were riding along carelessly enough, when all at once the bushes by the roadside shot flame and smoke. Everything was confusion at the sudden attack.

My horse leaped to one side and then ran up the road. The cavalrymen, some of whom were wounded, wheeled about and galloped down the road, and were soon out of sight, and the battle was over in three minutes.

"Hold on! hold on! Surrender, Colonel!" shouted a hundred voices at me, and directly my horse carried me into the midst of a hundred cavalrymen, handsomely concealed in a bend in the road.

"Good afternoon, Colonel," remarked a deep, rich voice on my left. "I'm sorry for you, but then you could have fared worse!"

I looked around and saw a Colonel of cavalry, a handsome man, with bright, black eyes, and long black beard. His face wore a good-natured smile, and he held out his hand to me.

"Yes, I might have been killed," I replied, accepting his hand. "I deserve this for my inexcusable carelessness in not sending scouts forward."

The cavalry camp was only half a mile up the road, and as the command moved along, the Colonel and myself rode in the rear. He introduced himself to me as Colonel Le Ville. We commented on my capture, the war, etc., and had sighted the camp, when he suddenly inquired:

"Have you noticed, Colonel, that the road bends three different times between here and the forks?"

"Yes, I think it does," I replied.

"Well, now," he responded, "it will be an easy matter for you to escape. Turn your horse suddenly, give him the spurs, and you can reach the forks in five minutes. If any men chase you, and they will, the bend in the road will save you. I shall cry out the moment you get started, and may shoot you, but shan't hurt you."

"You are rather given to dry jokes," I replied, endeavoring to laugh.

"Such things are not down in army regulations." "Nevertheless, I mean all I say," he replied; "we are now ten rods behind the men. Wheel your horse and make him do his best. The firing will have caused the troops on the other road to fall back, and you can soon come up with them."

I looked hard at him, but his countenance stood the test. I believed he meant what he said. The thought came into my head that he meant to shoot me down, but I repudiated it when I had looked him over again.

"Well, Colonel, God bless you," I said; "if the fortunes of war ever make you a prisoner, I will do as much by you, if it costs me my sword."

I wheeled my horse, gave him the spurs, and was off like a rocket. The Colonel called me to stop, and emptied his revolver in shooting over me. Just as I passed around the first bend, I heard the cavalry after me; but they might as well have saved their horses. In ten minutes I was again with the Union troopers, and we were on the gallop back to Winchester.

I did not feel free to go into particulars in regard to my escape, and the men and officers looked upon it as a great thing, inferring that I had fought my way out. It puzzled me more than I can tell to account for the generosity of the officer. I had never seen him before; had never known of a similar instance, and all my pondering failed to bring the remotest satisfactory solution.

But I was to secure a solution at last.

For a week or so we had a monotonous life at camp, without a movement on either side, and then we determined that Winchester should change hands again. In council we planned an attack. Part of the infantry were to advance by the road, part to attempt a flank movement on the enemy's left, assisted by cavalry, and I was to lead the balance of the cavalry, dismounted, in an attack on his right.

Everything was quietly arranged, and one noon we gave the Confederates a return surprise. The first intimation of our programme was the driving in of the pickets, and our men came near leaping their breastworks. However, the enemy quickly rallied, and then we had it hot and heavy—carbines cracked, bugles sounded, the terrific cannon roared, the muskets rattled, men shouted like demons, and a pall of smoke covered it all.

Having plenty to do to defend this point, the Confederates left their camp exposed for us to dash at. We swept down upon them, and then it was a hand fight. Some one dashed at me through the smoke, and I lunged back, feeling that my sword had found flesh.

They charged and were driven back; we charged and drove them. I caught sight of fluttering garments as we pressed forward, and the next moment stopped close to a woman who was kneeling beside a wounded officer lying at full length on the ground.

Through the blue smoke I caught her eyes fixed on mine in terrible reproach, and above the clash of arms and the shrieks of the dying, I heard the quick words:

"You have killed him—now stab me to the heart!"

It was Kate!

I hardly know what happened during the next five minutes, but at the end of that time we had driven the enemy back into the village, and a few minutes later clear out of the Southern suburbs. Then I very hastily returned to the battle-field.

The dead were lying all about, and the wounded were crying out on every hand. The work of caring for the latter had already commenced, and I went straight to Kate, who was weeping and sobbing over the white face of a Confederate officer.

"Go away! he is dead forever!" she wailed, as I came nearer.

"War is but murder; he was murdered!"

Stooping down I found that the officer had a sword cut in the shoulder, and that a pistol ball had creased his skull, stunning him for a time. Even as I made the examination, he moved a little and groaned out, and in two or three minutes was fully conscious of his situation.

Kate was like a lunatic. She laughed and cried until the powder-stained soldiers thought the noise of battle had driven her crazy. The old house had been riddled again and again, but the farmer and his wife were unhurt. It was only a little way off, and when we had carried the officer there, a surgeon dressed his wounds.

The dead were buried, the wounded sheltered and dressed, and when night came our lines were advanced so as to put Winchester behind us. I did not go back to the farm house until next day. The officer's face was so stained with blood and powder when I saw it the day before that I had no idea who it was, merely noticing that he was a Colonel of cavalry. What was my great surprise, then, to encounter the phiz of Colonel Le Ville as I entered a bed-room at the farm house.

"Good afternoon, Colonel; I am sorry for you, but you could have fared worse!" I exclaimed, repeating the words he had used when addressing me as a prisoner.

He was bandaged up and was still very weak, but he smiled cheerfully, and cordially held out his hand for a shake.

I saw in a minute how things were. He was Kate's lover. I had only to notice her blushes and the tender look in her eyes to be sure of the fact. Then it came to me that Le Ville had been with those who drove us out of Winchester. He had heard from the Hastings family that all had been well used and courteously treated, and to show me that he was appreciative, he had allowed me to escape.

It gave me a bitter pang to feel that any further struggle on my part was hopeless, but I tried to shake off any sour feeling. I was in duty bound to take the Colonel's word of honor, if no more, that he should not attempt escape. It may seem strange to you that I did not. The official report of the battle forwarded to my superior did not even mention the fact of his capture.

I saw the Colonel almost every day. In a week he was able to walk around. I saw that he was somewhat anxious to know what disposition would be made of him, but I left him to work out that problem. One morning I missed him. No one seemed to know what had become of him, and I did not press them for particulars. The Colonel and I were even.

Well, there came an order which took me to post a hundred miles away, and in the hot campaign I came near forgetting the Hastings family and the Colonel.

One day, when a regiment of Union cavalry was hurled against a thousand Confederate horsemen, and when victory seemed about to perch on our flag, a battery of artillery played such havoc among us that the bugle blew a retreat. In the confusion, thirty or forty of us were cut off and made prisoners.

"Good afternoon, Colonel. I'm sorry for you, but you could have fared worse!"

Close at my right hand was Colonel Le Ville, hearty and well, and his sabre not yet sheathed after the fight. A hundred men wondered as we shook hands; but we fully understood ourselves.

"I can't let you ride off as you did before," remarked the Colonel, as he passed with me behind the line of battle. "But you shan't be long a prisoner. I'll have you exchanged within three days."

And he kept his word. While other officers went off to Richmond, I went to Washington, and then to my regiment, duly exchanged. His influence was what effected it.

He was not married yet, but he informed me that he should be in a few months, and in his joking way invited me cordially to his wedding, which was to take place at the Hastings' farm house.

"I think I'll come," I replied; "and in case I should capture you again, I shall clear off this debt; you are one ahead now."

Nothing was more frequent than to change the cavalry from left to centre, from centre to right, and back and forth until it might be said of them that they did not belong to any one's division. So I thought nothing strange of it when my regiment took a march of seventy miles, and brought up one night on the road to Winchester, not half a mile from the old farm house.

There was to be an advance on that road, and we were to take the front. Infantry and artillery were in force at our backs, and we learned from a scout soon after dark, that the Confederates were certainly on the retreat, leaving not a soldier between us and the farm house.

There was no one in advance to order me to make an advance, and as we had selected a camping spot, no advance was made.

Something kept telling me all the time that Colonel Le Ville was near. I could not shake off the voice, and so wandered down the road where the pickets were stationed.

The advance was within a dozen rods of the farm house. As it had not been disturbed, I pushed very rapidly almost to the house, followed with the reserve picket.

Everything was still around the place, but we saw shadows on the curtains, and finally entered the yard and walked up the path. Nearing the door I heard a deep solemn voice reading or repeating a ceremony. Stepping boldly up, followed by the men, I opened the door upon a marriage ceremony.

Colonel Le Ville, in full uniform, held the hand of Kate Hastings; a minister stood before them, the parents on either side; one or two citizens were there as witnesses. The group was thunderstruck, and for a moment no one moved or spoke.

"Good evening, Colonel," I remarked. "You invited me, you remember, and I am here."

I held the door so that none of my men had looked into the room. I now whispered to them to go back to the road and look sharp, and then entered the room.

The clergyman had taken a seat, and was ordered to go on, and no explanations were then made until Miss Kate Hastings was made Mrs. Colonel Le Ville. Then we explained.—There was laughing and crying, and a "regular time," as the old ladies say.

"The Colonel did not know that the Confederate rear guard had passed on, but was intending to wed Kate and move South an hour after. He looked at me and read my decision, and Kate leaned on his shoulder and wept that he was again a prisoner.

What happened?

Well, nothing to you. I don't want to hear anything about "army regulations," "conspiracies," "court martials," and such talk. It is, however, my opinion that Colonel Le Ville got away somehow.

I was down in the Shenandoah Valley a few months ago, and whom do you think I took dinner with?

The Colonel looked as bright and happy as a new silver dollar, and Kate was more charming than ever. The war rested hard on both, but peace and love had made the farm house a little paradise, and there was money in the crops growing on every foot of ground.

A curly-headed boy was racing about, and he was named after me. If they had not told me this, I should not have had the courage to reply that I had a handsome little daughter away up in Michigan named Kate.

Neither Uncle Samuel nor Jefferson Davis ever knew the customs of war were most signally outraged, and it is too late to court martial either one of us now.—*Our Fireside Friend.*

ANIMALS OF THE AMAZON VALLEY.

I cannot enlighten the readers of the RURAL CAROLINIAN on the subject of new and improved methods of argriculture, for such are not practised in this country; but a few brief notes on the game found here, perhaps, may not be altogther uninteresting.

To a stranger game seems to be very scarce, for the forest being dense the animals cannot be seen, though often quite near, but experience in the woods and a knowledge of their habits, frequently render them an easy prey. Most of them when pursued will run for a hollow tree or a hole in the ground. Among those that seek security in holes, are both kinds of Wild Hogs, Armadilloes, Porquepines, Pachers, Cotiers, Raccoons, Opossums, and many other smaller animals, all of which are eaten by the natives.

Pachers, Armadilloes and Cotiers, we regard as very fine meat. The others mentioned are inferior. The large hogs are never fat. The small sort are more desirable. Both kinds have a repository situated on the centre of their back from which they eject a most feted and disgusting smell, when pursued or in their holes and fearing capture. They are all of the same color, the hair and bristles are coarse, and they have short tails. They can out run a Brazilian dog, but some times are cornered, and then they make a good fight. Great care is necessary when approaching, for if you shoot and cripple one, the entire gang will come to his rescue, and the hunter must take to a tree. They some times make raids on the Mandioca fields, in large gangs and destroy the crop in a short time, but as a general thing, they inhabit the most dense forest, and go a long distance for water. They mostly travel in paths of the same route.

The Pacher is about the size of a four month Berkshire pig, and is at all times fat, flesh juicy, and tender. They have very short legs, are of a dark color, with white stripes, running length-wise. The Opossum found here has no better character than those of South Carolina. They possess the same art of feigning to be dead, till a chance offers to escape, and can be often caught in the hen house, perpetrating foul (fowl) murder. A few nights ago we heard an old hen that was

in a coop scream for help, we ran out, and saw a long tail hanging out of a hole which the owner had crawled in at. The tail was seized and the animal subjected to certain rotary movements till centrifugal forces got into action, when its head was brought in contact with sundry fruit trees.

There are several other animals of the same class that carry their young in a pocket, open to sight; the smallest known to me, is about the size of a small rat, the others less in size than the Opossum. They are very pretty little animals, which, cannot in my opinion, be said of the Opossum.

The most notable of the large animals are the Anta and Deer. The latter often enter the fields, and are destructive to the pea crop and young Manina. About two weeks ago a large deer attempted to cross the slip made on the mountain side for the purpose of sliding sugar cane down. The bottom being smooth, as soon as the deer steped in to it, he fell and could not rise, for he slipped with such velocity, that he was thrown out at the foot. Several instances have occurred since we have lived here, that deer have been captured without shooting, quite near the house.

The Anta will be better known when I mention that natural history calls it the South American Tapir. It is a heavy, thick set animal. A large one will weigh from 600 to 700 lbs. All its bones are without marrow, and solid, except a very small hole in leg bones, not more than one-eighth of an inch in size, which contains a sort of pith, a fact that I do not recollect, having read of in history. They have a most wonderful thick skin, and are of great strength. When pursued they will go through the thickest brush or vines, tearing everything down in their route. When rushing through the woods, the noise of breaking vines, and cracking dead brushwood is most alarming. The Anta, Pacher and Cotier have feet exactly the same.

All animals found here are, when taken young, easily domesticated and get to be so familiar that they are troublesome.

Most of the game animals travel regular paths, and as soon as a path is found, we set a gun on one side in the bushes, so arranged as to range about the centre of the animals body, with a line leading across the path. As soon as the line is moved or touched, the gun goes off, and the animal is invariably found. When signs or tracks are seen in the fields, their place of entrance is easily discovered, and they are taken in the same way.

The natives eat monkeys of every class, they also regard the Chamelion and Largarto (a species of Lizard that grows from two to three feet in length) as among the most choice game, and these are much sought after in cities. The Chamelion feeds on vegetable matter exclusively. Largarto is the Portuguese word for Lizard, and they are to be found of every intermediate length from one inch to three feet, and every class has its name. The large kinds that are used as food, are known by the very unpronounceable name of *Jaccuruaru*. They are a great plague to the poultry raiser. They eat eggs and carry off chickens, and sometimes ducks. On the river banks they can be seen scenting for turtle eggs, which they devour with much avidity.

VALLEY OF THE AMAZON.

Demantina, Brazil, November 27th, 1872.

A TOKEN.

Pink Oleander! Blossom sweet!
Cans't thou a message bear
Unto the lady of my love,
And breathe it in her ear?
Cans't thou tell her the hopes and fears
The longing and sorrow, too deep for tears,
That have risen and died, in all the years
Since first I held her dear.

Delicate Blossom! A subtle sweet
Floats from thy chaliced bloom,
So from my heart a deep love flows,
Rich as thine own perfume:
But as, at morn, a dewy tear
Dims but to render thee yet more fair,
So absence, making her seem more dear,
Shadows my heart with gloom.

Pink Oleander! Blossom sweet!
Fresh and pure, as an angel's face,
Folding the leaves around thy heart,
Full of a nameless grace!
Be thou an emblem of what I feel,
A pledge, a token, a living seal
Of love unfading, thro' woe or weal,
Reaching past time and space!

"STRIX."

Charleston, S. C., October 25th, 1872.

THE FLOWERING OF THE FIG.

To the uneducated eye the fig is a wonder. The fruit seems to come out in the place where the flowers ought to be; and the appearance is that there are no flowers before the fruit, as there is in other plants. It was the habit in past ages to attribute something miraculous to every appearance out of the ordinary course of nature and to take the occasion to connect these marvellous appearances with some individual whom they wished the world to venerate and esteem. So this fig tree marvel came to be associated with the flight of Mary into Egypt with the infant Jesus.

The Spaniards tell us, that in her flight she sheltered herself under a fig tree. In recompense for the security afforded, she blessed the tree, and bestowed upon it marvellous power. It produces two crops a year, and this is one of the blessings then conferred. But in order that the tree might be fertilized —for even in those days it was known that flowers were of two sexes—the tree put forth, by her command, one magnificent white flower of rare beauty. It was pure white, and shot forth rays of phosphorescent loveliness. This fructifies the whole tree, and renders any other flower unnecessary.

This flowering continues every year on one night only—St. John's night. It opens for a few minutes at midnight, and whoever could see or secure this flower, at the expense of the whole future of fig culture, would possess himself of a charm which would enable him to procure anything he might desire in this world.

The Virgin Mary, knowing this, caused the fig, for this evening of its flowering, to be guarded by all kinds of horrible things. There are snakes, lizards, bloated toads, birds of ill omen, wild beasts and venomous reptiles of every description, so that no one has ever been able to get near enough to see this miraculous and wonderful flower.

The story is firmly believed in by all those old Latin races, whose chance for life is cast in those regions where the fig tree dwells; and has always been a sufficient reason to them why the fig tree has never any flower, as they think.

What a pity it is that the cold hand of science is so ever ready to crush to death all these beautiful stories. It tells us, in spite of these lovely traditions of ages past, that the fig has flowers like unto any other plant, but the flowers are inside what we call the fruit. All flowers rest on something.

Take the apple, for instance. The petals are set on small globular projections. The floral part, the stamens, rise out of the centre of the globe; and after they die away this globe swells and becomes the apple which we eat. The fig is formed pretty much in the same way.

The little globe which we see pushing from the axle of the leaf, and which afterwards becomes the fruit, is filled with floral parts, just as we see in the apple; but these parts never project up the centre so as to be seen by vulgar eyes. There is a small orifice at the apex through which the pollen is drawn, and that is all that is known to any one except of the more curious class.

The curiosity is rewarded, on breaking open a young flower, by finding it filled with a pink, spongy substance; each of the little projections composing it being found by a small pocket lens to be a small flower. Thus the mystery ceases. The fig is really a little community in which hundreds of individual flowers dwell, and thus ends, in hard cold facts, the mystery of the Virgin and fig tree.

"FOR THOUGHTS."

A pansy on his breast she laid,
Splendid, and dark with Tyrian dyes;
"Take it; 'tis like your tender eyes,
Deep as the midnight heaven," she said.

The rich rose mantling in her cheek,
Before him like the dawn she stood,
Pausing upon life's height, subdued,
Yet triumphing, both proud and meek.

And white as winter stars, intense
With steadfast fire, his brilliant face
Bent toward her with an eager grace,
Pale with a rapture half suspense.

"You give me, then, a thought, O sweet!"
He cried, and kissed the purple flower,
And bowed by love's resistless power,
Trembling he sank before her feet.

She crowned his beautiful bowed head
With one caress of her white hand;
"Rise up, my flower of all the land,
For all my thoughts are yours," she said.

[*Scribner's Monthly.*

PERFECT ROSES.

Peter Henderson, in the *Agriculturist*, in allusion to the fact that all the good qualities of fragrance, beauty, hardiness and constant blooming, are not to be found in one rose, quotes the words of a German neighbor, who came to him in great irritation and said:

"I have so much drouble with de ladies when dey comes to buy mine rose; dey wants him hardy, dey wants him doubles, dey wants him mondly, dey wants him fragrand, dey wants him nice gouler, dey wants him eberydings in one rose. I have somedimes say to dat ladies: Madam, I never often see dat ladies dat was beautiful, dat was rich, dat was good tember, dat was youngs, dat was clever, dat was berfection in one ladies. I see her much not!"

For our Young Folks.

THE OVEN BIRD.

In South America there is a bird that builds its nest of clay, and shapes it something like an oven; and for this reason it has been called the "Oven Bird." The Israelites, when under task-masters in Egypt, were compelled, as you know, to make bricks. And we read, that they mix straw with clay.

Not being as well skilled in the art of brick-making as people now are, their bricks would not keep in good shape until dried, or burnt, without the straw to hold them together. Among the ruins of Babylon, and other ancient Eastern cities, half-burnt, or sundried bricks, are found at this day with the grass and straw still in them.

Now this curious oven bird does, from instinct, just what reason, taught by necessity, led the Israelites, and other ancient brick-makers to do. In building his dome-shaped nest of the wet clay he gathers by the river banks, he mixes in grass and straw, and they help to keep everything in shape until the hot sun of the tropics bakes the clay nearly as hard as brick. The nest has two chambers, made by running a wall of clay across from side to side. In the inner chamber, which is nearly dark, the mother bird lays her eggs on downy feathers, and then hatches her young.

The oven bird is brown in color, slenderly built, and about the size of a lark. He is a bold-looking fellow, and very active; always running or walking about very fast, or flittering from bush to bush in search of the insects on which it feeds. He is to be found on the banks of South American Rivers.—*The Children's Home.*

AMERICAN WONDERS.

The greatest cataract in the world is the falls of Niagara, where the water from the great upper lakes forms a river three-fourths of a mile in width, and then being suddenly contracted plunges over the rocks in two columns to the depth of one hundred and seventy feet each.

The greatest cave in the world is the Mammoth cave in Kentucky, where one can make a voyage in the waters of a subterranean river, and catch fish without eyes.

The greatest river in the world is the Mississippi, four thousand one hundred miles long.

The largest valley in the world is the valley of the Mississippi. It contains five hundred thousand square miles and is one of the most fertile regions of the globe.

The largest lake in the world is Lake Superior, which is truly an inland sea, being four hundred and thirty miles long, and very deep.

The longest railroad in the world is the Pacific Railroad, over three thousand miles in length.

The greatest natural bridge in the world is the Natural bridge over the Cedar Creek in Virginia. It extends across a chasm eighty feet in width and two hundred and fifty feet in depth, at the bottom of which the creek flows.

The greatest mass of solid iron in the world is the great Red Mountain, near Birmingham, Alabama. It is three hundred and fifty feet high and fifty miles in length, of almost solid iron ore, the largest and richest deposit known in the world.

PADDLE YOUR OWN CANOE.

Judge S. gave his son a thousand dollars, telling him to go to college and graduate. The son returned at the end of the Freshman year without a dollar and with several ugly habits. About the close of the vacation the Judge said to his son:

"Well, William, are you going to college this year?"

"Have no money, father."

"But I gave you a thousand dollars to graduate on."

"It's all gone, father."

"Very well, my son; it was all I could give you; you can't stay here; you must now pay your own way in the world."

A new light broke in upon the vision of the astonished young man. He accommodated himself to the situation; he left home, made his way through college, and graduated at the head of his class, studied law, became Governor of the State of New York, and entered the Cabinet of the President of the United States.

Physical Culture.

A LESSON IN LIVING.

It was an aphorism of Brillat-Savarin that, "The fate of nations depends upon how they are fed." This is not so fanciful a statement as might at first appear; for the power of a nation to sustain itself, not only in war, but in the competitive industries of the world, is truly in proportion to the health, vital stamina and mental vigor of the people composing it; and that diet has much to do in establishing and maintaining these conditions, no thinking person will question. A people whose diet is mainly flesh will necessarily differ widely from another that lives on rice and vegetables. A generous bill of fare will create a more liberal feeling than a meagre one, and so on.

But it is mainly in reference to its wholesomeness, that the diet of a nation is important. A nation of dyspeptics cannot long remain a strong, a prosperous or a happy one; and this brings the subject home to us, as Americans of the United States. No nation on the face of the globe has, in such abundance, all the raw materials of a healthful, generous and enjoyable diet as we, and no civilized nation, perhaps, is so badly fed.

An American, who has resided for some time in Paris, has been making observations on the gastronomic habits of the people, and the following comparison between them and those of his native country are suggestive and instructive. We quote from the *Galaxy* for March:

The poorest class in the United States is well-to-do compared with the poorest in France, yet it is not as well fed nor as happy. There is a general cheerfulness in this people which strikes the foreigner as soon as he enters the country. Race and climate have doubtless something to do with it, but hygienic nourishment and a sound stomach much more. In presence of this fact, one cannot help regretting the waste of time and energy of reformers and philanthropists who, to bring about man's amelioration with us, are always addressing themselves to his head, to the neglect of his stomach. It is an elementary law governing the human system that the brain and the stomach are two neighbors who can not afford to be at enmity any length of time without mutual deterioration or destruction, and that an improvement in the condition of one implies an improvement in the other. Naturally, this A B C knowledge is familiar to most people, but it does not yet receive the consideration which its importance demands. The foundation of the Frenchman's happiness is laid in the best bread in the world both in taste and nutriment, the most nourishing wine, and the best cooking—save in roast beef, in the preparation of which, as well as in carving, the English enjoy a superiority. Besides the quality of the Frenchman's food, there is a healthful feature in the usually well-ventilated apartments in which it is eaten, and another in the jocularity and leisure attending the repast. Sloppy coffee and hot biscuits are not conducive to gayety; ice-cold water and thin soup peppered to the burning point are not joke-inspiring; and a *pot-pourri* of water-reeking vegetables is not productive of a humor to set the table in a roar. These, in a word—to say nothing of those enemies of the American table, heat and haste—are joy-killers, with sequent dyspepsia.

IRISH LADIES.

Happening to be in Queenstown, Ireland, one evening in July last, I was invited to attend a grand ball. I had been doing some of the interior districts of Ireland, and was so tired that at first I was rather inclined to excuse myself. But before deciding, I asked a question or two: "Is it a big thing?"

"Never saw anything so grand in town!"

"What class of women?"

"The first class; the very best from Queenstown, Cork—in fact, the most beautiful women in the world."

I knew how the common women of Ireland looked. I had seen hundreds of them about Killarney selling "mountain dew and goat's milk," and in fact for some time had seen almost nothing else. But I had seen the common class only—the servants, peddlers and peasants. I had not seen the aristocracy. I made up my mind to go. I thanked the gentleman and began at once on my hair and clothes.

The number of ladies was about one hundred and fifty. Their dress was like that of American ladies on similar occasions, only a trifle more so—sleeves a little shorter, corsage a little lower. The ladies were remarkably self-possessed, quiet and graceful, and I think, on the whole, averaged prettier than I have ever seen for the number on such an occasion.

Some of our naval officers were present in their stunning uniforms, and were honored with marked attention and the sweetest smiles.

I have written all this rigmarole in order to say something about the physical development of these Irish ladies.

The Irish girls we have seen in America have full chests, large, fine arms, and are altogether plump and vital. When an American

lady has shown me her arms—candle-dips, No. 8—and has asked, "How can I get such arms as Bridget's?" and I have said, "*Work, work*, as she does, and you will have her arms," the lady has generally said, "O, that is not work, that comes from climate. I tell you if I had been brought up in Bridget's climate, I should have had her fine bust, but this terrible dry American air takes all the juices out of us."

My curiosity was on tip-toe to see how Irish ladies, brought up in their moist, even climate, but without work, would look.

I have said there were one hundred and fifty ladies present. They were certainly very pretty and very prettily dressed, but now, taking the witness-stand, I testify that I have never in America seen one hundred and fifty young women together with arms so small and chests so flat and thin.

They belonged to the idle class, and all the world over women of the idle class have spindle arms and thin chests, unless they become merely fat, which, with their weak muscles, is a sad embarrassment.

Elegance, education, rank, aspiration, ambition, prayer,—these will not produce a strong, full, muscular body. They are not the appointed means. *Exercise, exercise! Work, work!* this produces strong muscles, full chests and physical beauty. *Work* is the appointed means. DIO LEWIS, *In To-Day.*

LIFE UNDER GLASS.

A writer in the *Atlantic Monthly*, has sketched a plan for a winter garden on a magnificent scale, in which, in Northern climates, to secure for invalids, and particularly consumptives, a warm and equable temperature at all times during the cold season. The sanitarium proposed is no contracted conservatory, but a structure of iron and glass covering forty acres or more, surrounded by a wide street or boulevard, also enclosed with iron and glass, on the outside of which are two ranges of hotels, reached by enclosed passage ways, capable of accommodating, with board, sleeping rooms, parlors, &c., the ten thousand people who would spend their days mostly in the beautiful tropical garden. The estimated cost of the garden and its accessories is only $12,000,000.

——A tower of iron, in open-work, one thousand feet in height, is to be erected in Philadelphia, from the summit of which it is proposed to illuminate the grounds of the Centennial Exposition, by means of a Drummond light.

DOMESTIC ECONOMY.

TABLE USE OF OATMEAL.

Oatmeal is little used in this countay as an article of diet, but it has excellent qualities, and is worthy of a trial by them who desire to increase the variety of their breads. The *Science of Health* gives the following directions for making

OATMEAL BREAKFAST CAKE.

This is made of No. 2 oatmeal, with water enough to saturate it, and little or no salt. Pour it into a baking tin half an inch or three-quarters deep, shake it down level, and when this is done it should be so wet that two or three spoonfuls of water should run freely on the surface. Put it in a quick oven and bake twenty minutes. Eat warm. It will be as light and tender as the best "Johnny cake," or else you have wet it too much or baked it too long. This is one of the most accommodating baked dishes that can be made. It will do very nicely with a little longer time if the oven is not quite hot. If it will not bake there at all, pour it into a frying pan, cover it close and set it on the top of the stove where it will even bake in fifteen minutes.

For a hurried breakfast and a slow coal fire it is invaluable. Scarcely any wholesome thing in the whole bread line can be prepared more readily. It can be made still thinner and baked quicker. It is good either crisp or moist. For emergencies alone every housekeeper will find it convenient to be able to make the breakfast cake. Many use oatmeal mixed with buckwheat, wheat or corn, for griddle cakes. For this use I prefer it cooked first. Take say one-half pint of the porridge or the mush, diffuse it in one quart of water, and add the wheat meal, sifting it in and stirring slowly.

A POETESS IN THE KITCHEN.

Jean Ingelo, writing to an American lady, has the following thoughts in regard to the elevation of household work:

So long as household work is thought degrading, (and no where is this so much the case as in America,) there never can be any thing like universal education; there must always be some who work all their lives, because others will not work at all. It is to be one of the great things that you Americans, I believe are raised up for, to teach the world how this is to be done; but the teachers can never be those who are poor; they must be those who are not obliged to work at all.

How to make clear-starching and ironing

graceful, and pretty occupations, (and such they were thought by our great-great-grandmothers,) how to keep a house clean, and to assist, even in a kitchen, without the least sense of being lowered, or the slightest personal deterioration, might surely be managed if women gave their minds to it—if more delicate machinery was invented for helping them, and if it could even be made the fashion for all women, young and old, to pride themselves on their domestic skill.

TOMATO FRAZADILLO.

We have received from J. Ulrich, Esq., the obliging United States Consul at Monterey, Mexico, a quantity of seed of the *Tomato Frazadillo*, (Blanketted Tomato) much esteemed there for the same uses as the common tomato. The fruit is about the size of a pigeon's egg, green colored when ripe and has a pleasant sub-acid flavor. It is covered with a husk, like the Ground Cherry or Strawberry Tomato (*Physalis edulis*) and probably belongs to the same family of plants. We will mail a small package of the seeds, till the supply shall be exhausted, to any subscriber of the RURAL CAROLINIAN, who may send us a request to that effect *accompanied by a stamped envelope, with his or her name and address on it.* This condition must be strictly complied with, or the seeds will not be sent.

GARNISHES FOR MEAT.

Horseradish scraped into shavings for roast beef. Put a pinch as large as an egg, lightly on the joint, and an equal quantity in even spaces around the dish. Leaves or tender sprigs of spear-mint around mutton or lamb. Parsley for chicken, veal, and fish; to the latter two, slices of lemon may be added. Red beet-root, boiled and sliced, and boiled carrot sliced, make a very pretty garnish for boiled beef. Fried sausages or balls or forcemeat around turkey and roast chickens. Parsley around boiled chickens. Game may be garnished with jelly.

CHICKEN CHOLERA.

MY DEAR RURAL: My mother's chickens were taken sick with the cholera this season, and I tried the following recipe with success:

One table-spoonful of Founty's Cattle Powders, two tea-spoonfuls of Bromo chloralum, and one pint of Indian meal. Feed once every day to about twenty-five grown chickens.

Chester, S. C. A SCHOOL GIRL.

RECIPES.

The following are a few simple recipes for plain, wholesome, inexpensive dishes, tested by me and known to be good.—*Mrs. M. E. J.*

A GOOD OMELET.—Beat the whites and yolks of three eggs separately—the whites as much as for frosting; add a teaspoonful of water and a pinch of salt to the yolks, beat and add to the whites, mixing them lightly. Put a teaspoonful of butter into a flat frying pan; hold it over the fire till warm, and then pour in the egg. As the mass begins to cook run a thin knife blade around the edge to keep it from burning. As soon as the surface is about dry, fold one-half the omelet over the other, slide it off on a plate, and it is ready to serve. It will cook in a few minutes, and should be eaten immediately. Six eggs may be cooked in a large frying pan. While eating its heart of foam, I am sure you will say a better was never elaborated by Prof. Blot himself.

APPLE DUMPLING PUDDING.—One quart of apples, pared and quartered, in a two-quart pan; pour half a tea-cupful of cold water over them; make a paste of two and a half tea-cupfuls of flour, one table-spoonful of melted lard, one heaping tea-spoonful of Sea Foam baking powder, and a little salt; mix this with not quite a tea-cupful of cold water, roll out about half an inch thick, put it on the raw apples, make a slit in the crust, put in a tin dish, cover and set it on the stove. It will cook in about twenty minutes. Make a sauce of two table-spoonfuls of melted butter, a tea-cupful of white sugar, half a tea-cupful of milk; flavor to taste.

WELSH RAREBIT.—Put into a frying-pan a quarter of a pound of cheese cut up into thin slices. Pour on it half a pint of sweet milk. Stir in an egg that has been already beaten up, add a fourth of tea-spoonful of mustard, a little less of red pepper, and a tea-spoonful of nice butter. Have some bread slices toasted, and pour this mixture over them.

MUFFINS.—One egg; two cupfuls of milk, or one of milk and one of water; four tea-cupfuls of flour and two spoonfuls of Sea Foam baking powder. This makes just enough to fill properly a dozen muffin rings.

Notes and Memoranda.

SCIENTIFIC MEMORANDA.

No Alcohol in Pure Wine.

Dr. E. W. Sylvester, of New York, has broached the novel theory that pure wine is not an alcoholic beverage—in other words that fermentation does not produce alcohol. He calls the fluid produced by the fermentive action of sugar on the juice of the grape, "fermentine." This fermentine becomes alcohol only on the application of heat sufficient to produce evaporation. Natural temperature, when high enough to cause a somewhat active evaporation is sufficient to effect the change when in vessels not entirely filled. It is claimed that this new product—fermentine—is essentially different from alcohol in its effects on the human system and upon various substances in nature.

Fermentine, as taken moderately in pure wine, gently and healthfully excites the system, and has the power to restore the victim of a burning fever to natural action and vigorous health; while alcohol spends its whole force on the nervous system—breaking down and shattering instead of building up. Hence the doctor concludes that no wines should be used which have had alcohol added to their bulk.

Stagnant Water.

An impression that when still water in pools and in canals, where is scarcely a movement, is extremely dangerous, and especially when covered with confervæ, admits of a question. At the Hague, the capital of Holland, threaded with canals in which no current is perceptible, they are so densely carpeted with a thick green scum, strangers turn away from them in fear, as though they were poisoning the atmosphere. But no such apprehension as being charged with mephitic gases is expressed by the inhabitants. They neither see nor imagine any sanitary disturbance from such a source. Investigation shows that the confervæ is a vegetable growth, actually modifying and purifying exhalations passing up through the delicate covering. These facts are not to be taken as showing that stagnant pools near our dwellings are desirable, but as evidence of a wise provision of nature for rendering them less noxious than they otherwise would be.

Human Physical Improvement.

In Geneva, accurate registers have been kept of the yearly average of life since 1560, which was then twenty-two years, six months; in 1833, it was forty years and five months. Thus, in less than 300 years, the average duration of life was nearly doubled. In the fourteenth century, the average mortality in Paris was one in sixteen; it is now about one in thirty-two. In England, the rate of mortality in 1690, was one in thirty-three; now about one in forty-two.

Peaches and Almonds.

A remarkable statement by M. Luiret, has recently appeared in the *Revue Horticole*, namely, that an almond, grafted on a peach, bore, during 1863 and 1864, almonds alone; but in 1865 bore six peaches and no almonds. Mr. Carriere, in commenting on this fact, cites the case of a double-flowered almond, which, after producing during several years almonds, suddenly bore, for two years in succession, spherical, fleshy, peach-like fruits; but in 1865 reverted to its former state, and produced large almonds.

Light and Germination.

According to Prof. Joy, late experiments appear to establish the fact that while exclusion from the luminous rays of the solar spectrum is necessary to the healthy germination of seeds, yet the chemical or actinic rays are indispensable to that process. These penetrate deeper into the soil than the luminous rays. The exclusion of the chemical rays, and not the absence of oxygen alone, is assumed to be the cause of seeds failing to grow when buried too deeply in the earth.

The Function of Potash in Soils.

The presence of potassium in soils, (as Nobbé's experiments seem to show,) is necessary in order to enable the chlorophyll grains of the leaves to form starch; sodium and lithium being unable to replace potassium in this function, the latter indeed being actually injurious. He has also ascertained that the different combinations of potassium vary very much

in their value, the chloride, and muriate of potash being by far the most efficacious.

Effects of Color on Vegetation.

M. Baudrimont obtains results the reverse of M. Poey, and affirms that all the colors without exception are unfavorable to vegetation, and none more so than violet. All plants lighted by it died first; after violet the most unfavorable was green. Blue, optically situated between them did not give so fatal results.

Effects of Oxalic Acid on Seed.

An English scientific journal states that oxalic acid promotes the sprouting of seeds, so that seeds forty years old will germinate by its application. The method is to soak the seeds for one or two days in a solution of oxalic acid, till they commence to sprout, when they are taken out and planted.

LITERARY NOTES.

Mr. Paul H. Hayne sends to *Appleton's Journal* a little poem by Henry Timrod, discovered among the poet's papers and not before published. "It seems to us," the editor says, "instinct with a delicate grace, which entitles it to rank among the best of the poet's quieter verses." It is entitled

A TRIFLE.

I know not why, but ev'n to me
My songs seem sweet, when read to thee;

Perhaps in this the pleasure lies—
I read my thoughts within thine eyes;

And so dare fancy that my art
May sink as deeply as thy heart.

Perpaps I love to make my words
Sing round thee like so many birds;

Or maybe they are only sweet,
As they seem offerings at thy feet.

Or haply, Lily! when I speak,
I think, perchance, they touch thy cheek;

Or, with a yet more precious bliss,
Die on thy red lips in a kiss.

Each reason here—I cannot tell,
Or all, perhaps, may solve the spell.

But if she watch, when I am by,
Lily may deeper see than I!

The April number of *Scribner's Monthly* opens with "An Hour Among the Greenbacks," a copiously illustrated and very graphic and interesting description of the United States Treasury Department. Miss Proctor's profusely illustrated description of "Moscow and Southern Russia" will be read with peculiar interest at this time, as well as the sketch of "An Emperors Vacation at Vichy." Among the illustrated papers is an article on America's Prima Donna, Clara Louise Kellogg, with portrait, and besides Dr. Hollind's serial, "Arthur Bonnicastle," there is, by way of fiction, the beginning of a very powerful story by Saxe Holm, and several other readable tales. [Scribner & Co., New York; $4 a year.]

Lindsay & Blakiston, Philadelphia, publish "Alcohol: its Place and Power," by James Miller, in which it is shown, to the satisfaction of the author at least, that the "place" of alcohol is among the most deadly poisons, and that its "power" that of destruction for virtue, happiness and life. "The use and Abuse of Tobacco," by John Lizars, issued by the same publishers, examines the seductive "weed" from a scientific point of view and condemns utterly its use in all forms.

The *Atlantic Monthly* for April has an unusually attractive table of contents. Among the most noteworthy articles are Parton's "Exploits of Edmond Genet in America," "Some Impressions of London Life," "The Symmes' Theory of the Earth," and the continuation of Howell's "A Chance Acquaintance." The South is well represented by Paul H. Hayne, in "Wood Lake," by far the best poem in the number. [Jas. R. Osgood & Co., Boston; $4 a year.]

Oliver Optic's Magazine is pronounced by our young folks the best of all the boys' and girls' monthlies, and we are inclined to agree with them. In printing and illustration it has certainly no superior. Oliver Optic's serial, "The Yatch Club," is one of its present attractions. [Lee & Shepard, Boston; $2 50 a year.]

Savannah is to have a new weekly literary paper called the *Independent*. It will be published by Mr. Allen Chancey, a young gentleman of Savannah, at the subscription price of one dollar per annum. Prof. J. E. Hewett, will have the editorial management of the new journal.

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We observe that a joint stock company composed of merchants of Rock Hill, S. C., have bought the *Lantern*. Mr. Gaston Paul is the publisher, and the editors are Colonels Cad Jones and R. M. Sims. This is a strong and spirited combination.

——

"Cheerful Voices" is the apt title of an excellent collection of songs, duets, trios and sacred pieces of music for juvenile classes, schools, &c., by L. O. Emerson, published by Oliver Ditson, Boston.

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A letter from Col. C. C. Jones, Jr., of New York, formerly of Savannah, in the Macon *Telegraph* says that the Appletons are printing his "Antiquities of the Georgia Indians." The work will be out during the present month.

——

Paul H. Hayne has taken charge of the literary department of the Rome (Ga.) *Courier*.

INDUSTRIAL ITEMS.

The Lumber Trade of Florida.—It is reported that the number of vessels freighted at Pensacola with timber for European ports in the year ending October 1, was one hundred and sixty-six, with an aggregate tonnage of 139,081: the total of cubic feet thus exported was, of hewn timber, 5,790,072; sawn, 1,500,029. The corresponding statistics for the year preceding were one hundred and fourteen vessels, with a tonnage of 95,489, and a total in cubic feet, of hewn timber, 4,063,327; sawn, 1,057,455.

Coffee in Brazil.—There are three gatherings of coffee in Brazil. Nothing is more beautiful than a coffee plantation in full bloom. The snowy blossoms all burst forth simultaneously, and the fields seem covered with a delicate mantle of white which exhales a fragrance not unworthy of Eden. But the beauty is ephemeral, for the snow-white flowers and the delightful odor pass away in twenty-four hours.

Silk in South Carolina.—We learn that the experiment in raising the silk worm at Beaufort has been attended with entirely satisfactory results. The cocoons produced are very beautiful. Efforts are being made to establish a nursery at that place, which proves that the parties making the experiment are willing to risk a considerable amount of capital in it.

Linseed Oil.—A patent has been taken out by a party in England for treating linseed and other seed and vegetable oils so as to give to them all the advantages derived from boiling without having recourse to that process, and to retain other properties unimpaired which boiling destroys.

By Rail from Mexico.—A correspondent of the Germantown *Telegraph* remarks, that before the Centennial Celebration can take place we shall have trains running straight through from the city of Mexico to Philadelphia.

MERE MENTION.

The first in the field with a full and attractive Premium List for its Autumn Fair, is the Pee Dee Agricultural and Mechanical Association, a Society which, although only in the second year of its existence, has already taken a high stand. Its first Fair, last Fall, was one of the best ever held in this State, and there is every indication, we are assured, that the next will be even better.

——The Agricultural Society of South Carolina will hold its Annual Floral Exhibition during the present month, (notice of the time will be given in the daily papers,) when we hope to see a display of plants and flowers of which the city may be proud, as the Committee having the work in hand is composed of gentlemen who know how to do well what they have undertaken.

——A scientific pleasure party called *La Caravane Universelle*, is proposed in France. It object is the circumnavigation of the globe and a grand exploration of the five parts of the earth. It is to be under the guidance of M. le Captaine Bazeique, who has already been twice around the globe.

——The East Texas State Agricultural, Mechanical and Stock Raising Association, holds its first Annual Fair from May 26th to the 31st, at Jefferson, Texas. Thanks for a complimentary ticket.

——A company, with a capital of $10,000,000, has been organized for the purpose of constructing a tunnel underneath the Mississippi and Ohio rivers, at Cairo, Illinois.

The Government has established an Observatory at Fort Gary, Manitoba, which is as near as possible the central spot of the American continent.

——The founder of the Royal Institution, London, was Benj. Thompson, (Count Rumsford,) an American, and the founder of the Smithsonian Institution, Washington, was an Englishman—James Smithson.

——There is in China a suspension bridge which stretches four hundred feet from mountain to mountain over a chasm five hundred feet deep.

——Thirty-five thousand miles of railway has been built in the United States since the war, which is more than has been built in all Europe during the same time.

——The Florence (S. C.) *Pioneer* chronicles the organization of an Educational Association in that town.

CATALOGUES AND PAMPHLETS.

"Proceedings of the Annual Convention of the South Carolina Agricultural and Mechanical Society, held in Columbia, S. C., Nov. 5th, 6th, 7th and 8th, 1872." (Walker, Evans & Cogswell, Charleston, S. C.)

"Tribune Almanac for 1873." New York: Published by the Tribune Association; price 25 cents.)

"Illustrated Annual of Phrenology and Physiognomy for 1873." (New York: Samuel R. Wells; price 25 cents.)

"Address of the Hon. Marshall P. Wilder, President of the New England Historical and Genealogical Society," etc. (Boston: Published by the Society.)

"Annual Descriptive Catalogue of Garden, Field and Flower Seeds and Grain." (New York: R. H. Allen & Co.; sent free.)

"Catalogue and Guide to the Flower and Vegetable Garden for 1873." (Rochester, N. Y.: Crossman Brothers, seedsmen; sent free.)

"Annual Circular and Catalogue of Vegetable and Flower Seeds." (Marblehead, Mass.: Jas. J. H. Gregory; sent free.)

"Catalogue of fresh and genuine Field and Garden Seeds." York, Penn.: Edward J. Evans & Co.; sent free.)

PERSONAL NOTICES.

The Washington *Journal* says that Gen. R. E. Colston has actually accepted the Professorship tendered him by the Khedive of Egypt in the Government Military Academy at Cairo, and will soon depart for that ancient city.

Hon. Simon Brown, who, for more than twenty years, has had principal charge of the agricultural department of the *New England Farmer*, died on the morning of February 26, at his home, in Concord, Mass., at the age of seventy years.

Thomas J. Cockrell, under the *nom de plume* of "Brutus," is the lively and interesting Natchez correspondent of the *Turf, Field and Farm.*

General Breckinridge delivers the Princeton address in June.

SCRAPS OF HUMOUR.

Mississippi horses are taking to bad courses, if we may credit the verdict of a colored coroner's jury in Yallabusha County, which decided that a defunct darkey and his equally lifeless steed died "from the effects of butting their brains out against a tree while intoxicated."

A Minister, about to chastise a servant for lying, was asked: "Master, don't you preach that God ordains whatever comes to pass? Then how could I help doing what I did?" The Master replies: "It was also ordained that I should chastise you for it, and how can I help doing it."

The following letter, *verbatim et literatim*, was received by an undertaker, recently, from an afflicted widower: "Sur—my Wiaf is ded and Wonts to be berried tomorrow At woner klok. U nose wair to dig the hole—by the side of my too Other wiafs—Let it be deep!"

A man once went to a lawyer's office and told the legal gentleman that he had been insulted by a man who told him to go to ———, and desired to know what he should do. The lawyer suavely said: "I wouldn't advise you to go; the law doesn't compel you."

"Here's your in-waders," shouted a member of the 11th Mississippi Regiment, as Gen. Lee's veteran army plunged into the Potomac, on its way to Gettysburg. "And here's your wetter'uns," echoed a gallant soldier of the old 4th Alabama.

An agricultural paper out West thinks farmers ought to learn to talk. There are some who need to learn to do, and who talk too much.

USEFUL INFORMATION.

Camphor on Furs.—A lady who was a devout believer in the power of camphor, scattered the powdered gum thickly over her capes and muffs, and for two or three years triumphantly wore them, yet all winter long the disagreeable odor was retained in the fur. But this is not all. Even the first year the hair seemed to have lost a little of its gloss and life, and by the third, was too dull, old and worn-looking to be admired. Taking them to a fur-dresser for renovation, she was dismayed to hear that the gum-camphor had rendered her furs valueless.

Glossy Starch—Take two ounces of white gum arabic powder; put it into a pitcher and pour on it a pint of boiling water, according to the degree of strength you desire, and then, having covered it, let it stand all night. In the morning pour it carefully from the dregs into a clean bottle, and keep it for use. A tablespoonful of gum-water stirred into a pint of starch that has been made in the usual manner will give lawns, either black or printed, a look of newness, when nothing else can restore them after washing. It is also good, much diluted, for thin white muslin bobinet.

To Clean Kid Gloves.—Take one part of curd soap and three parts of water. Mix with heat, and then stir in one part of essence of citron. A little of this rubbed over the kid will readily remove all dirt without injuring the glove or leaving any unpleasant odor.

GENERAL ITEMS.

——Miss Lizzie Duffer, Miss Alice Hagey, and Miss Kate January, at the Murfreesboro', Tenn., Agricultural Fair, did contend for pre-eminence in the high art of cookery, the prize being a fine cooking-stove. Each young woman came at the appointed time, provided with provisions of her own selection, and in turn took charge of the cook-room. Miss January was the winner; and if it would be an object to any young fellow contemplating matrimony, she has, at least, a nice stove with which to start the housekeeping.

——In Egypt, mummies have been found with teeth filled with gold, and in Quito a skeleton has been discovered with false teeth secured to the cheek-bone by a gold wire. In the museum at Naples, among some of the surgical instruments discovered at Pompeii, there is a fac-simile of Sims' speculum. In the ruins of Nineveh, Layard found several magnifying glasses.

——The oldest man in the world has at length been discovered. His name is Jose Martino Continho, a resident of Cape Frio, in the Province of Rio Janeiro, Brazil, who was born on the 20th of May, 1694, and is therefore nearly 194 years old! It is said that he has forty-two children by six wives, and can count 121 grand-children, eighty-six great grand-children, twenty-three great great grand-children, and twenty great, great great grand-children.

——The original tree of the Loudon Pippin, in Loudon County, Virginia, was stated at the last meeting of the American Pomological Society, to have recently produced 80 bushels of marketable apples. Downing describes a tree in Massachusetts that bore 121½ bushels of apples in a single year; and Browne speaks of one at Romney, Virginia, that produced 180 bushels, besides refuse and a considerable amount carried away by visitors.

——In the United States and Switzerland there is one newspaper to every 6,000 inhabitants; in Denmark there is one to every 8,000; in Germany, Norway and Holland, one to 18,000; in France, one to 20,000; in Sweden, one to 22,000; in England, one to 24,000; and in Belgium, one to 26,000. In other European countries there are far fewer newspapers in proportion.

—— The famous Bessemer ship has encountered a rival in the floating cabin devised by a Russian. The construction is very much the same as that of the Bessemer, but the cabin, instead of being attached to a pivot, literally floats amidships between the engines. The invention has been tested by the Grand Duke Constantine, and is deemed successful.

——For three years a French farmer has introduced a small quantity of the residue of the bark used for tanning into each hole on planting his potatoes, and each time was completely successful in preserving his crop free from annoying disease.

——In Belgium there are 88 persons to every 100 acres of land cultivated; in Great Britain, 85; in Holland, 72; in France, 40; in Ireland only 34; thus Belgium is the most densely populated of these countries, and Ireland the most sparsely.

——In a recent address on the subject of Agricultural Fairs, Col. S. D. Harris forcibly urged the adoption, as far as practicable, of the permanent exposition system so successfully in vogue at Louisville and Cincinnati.

——A peacock was lately killed by accident in England at the age of 96 years. Under more favorable circumstances, it is believed he could have lived to become an old bird.

——Careful estimates prove that a horse requires for his sustenance the produce of eight times as much land as would furnish food for a man.

Feeding the Mules.

THE

Rural Carolinian,

Progress with Prudence, Practice with Science.

D. H. JACQUES, EDITOR.

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Thoughts and Suggestions for the Month.

The cotton crop will demand unremitting attention throughout the month. Any neglect at this season will tell badly on it, and cannot be wholly made up afterwards. Let the ploughs move briskly, and the hoes follow. Break out the middles thoroughly, and leave the whole ground perfectly clean. If the corn needs attention, it may be well, in some cases, after running two furrows to each row, to put the ploughs into the corn-field while the hoes go over the crop, returning and breaking out the middles afterwards. Toward the last of the month, the ploughs will have to get back into the cotton again. "Let no grass grow under your feet." "Chopping out" is an important process, and the hands should be well instructed and carefully looked after during the operation. With a good stand, it is easy to have the bunches left by the hoe at tolerably equal distances, so that when the final thinning is done (when the cotton has made its third and fourth leaves) the plants will be evenly distributed through the field. Shallow cultivation should be the rule; but the planter must not be the slave of rules, to the exclusion of common sense and a constant and vigilant watchfulness, to see when and where circumstances require a departure from them. No general rule can be made to apply to all cases, and cultivation must often be modified to differences in soil, situation and season.

———Corn will require its second working early in the month. Unless the soil be hard baked, so as to absolutely require a thorough and deep breaking up between the rows, we would work shallow near the corn. The plough may go deeper in the centre of the space between the rows. In any event, the destruction of grass and weeds must be complete, or we shall have more hay than corn, and in the wrong place for hay. If corn be checked for want of the proper cultivation or the presence of grass, at this period of its growth, it will never fully recover, and the attempt to root out or cover up the grass afterwards will result in great damage to the roots, and cause the crop to "fire."

———Immense quantities of fertilizers have been applied this season. We want careful observations of the results, and accurate reports next fall. Not only should

one fertilizer be compared with another, (noting the character of the soil and season,) but the results of different quantities and modes of application should be taken account of. This is a very important matter. The purchase of fertilizers is one of the largest items of expenditure in improved farming, and what we want to know is how to make the most out of it, by buying the manure best adapted to our soil, and applying in that quantity and manner calculated to produce the best results.

———Look out for drought! We may do this every season, and shall not look altogether in vain. What can we do about it? Keep the soil well stirred and our crops vigorous by clean cultivation. If the land was properly prepared before planting, we have the means in our own hands of protecting our crops against all moderate droughts. The bad farmer's corn and cotton suffer every year from drought, or from too much moisture, and generally from both. "Bad luck" is sure to follow him year by year, and will continue to follow him until he shall mend his ways.

———Frequent workings and a thorough pulverization of the soil are particularly beneficial on heavy lands. Disintegration favors the decomposition of the organic matter, as well as the absorption and retention of moisture. Light, loose soils require no more working than is necessary to keep them free from grass and weeds. We must see to it that they get so much as that, and that the growing crops be not robbed of the manure intended for them, as well as of the fertilizing materials already in the soil.

———Drill corn for fodder. Scatter thickly (at the rate of from two to three bushels per acre) in broad drills three feet apart. The land must be very heavily manured and deeply broken up. When the corn begins to tassel, is the time to cut and cure. Also, sow cow peas broadcast or in drills, for hay or to turn under, and Egyptian millet for green forage. Sow the latter in drills three feet apart, on rich, highly manured land. We know nothing that will produce so much forage per acre as this, when the soil has been well manured and prepared.

———Experiments are wanting to test the practicability and profit of applying commercial fertilizers as top-dressings to cotton and corn. Some contend that only a portion of the manure should be applied in the drill before planting, to give the crop a quick start, and that the extra labor of applying the remainder as a top-dressing later in the season will pay in the increased yield, the cotton or other crop getting the benefit of the application when most needed.

———Sweet potatoes for the main crop should be planted early this month, if possible. Early planting is one great secret of success in making large crops. The tuber continues to grow the whole season, and the longer we can make the season the better the crop, other things being equal. After planting, the principal thing is to keep the ground free from weeds and grass till the vines shall thoroughly cover it.

———Hands and mules must be well fed and kindly treated, if you wish willing and efficient labor. Give both time to eat and to rest, but when in the field let "lively" be the word.

Notes on Planting.—IV.

The machines of the plantation will be the subject of this article.

In clearing the original forests for culture in the pine lands of the South, the uniform practice has been, and is, to cut down the scrub oak and hickory undergrowth and smaller pines near the surface, and to girdle the larger pines, leaving the removal of the stumps and girdled trees to the process of decay. For many years afterward an annual cleaning up of fallen trash in the "new ground," and an exceedingly rough culture with rude and strong implements are consequent necessities.

On the score of expense, when the cost of these annual cleanings is aggregated, it is doubtful whether it will not equal that of a thorough removal of the forest growth in the first instance. But in the practice adopted the expense of clearing is spread over a longer time, and with land as cheap as it is, the space lost by the numerous stumps is not worth considering, in a money point of view.

In the course of ten or twelve years of cultivation, the stumps of the smaller pines and undergrowth, and most of the surface roots of the larger pines will have rotted and been pulled out by the plough. In from fifty to seventy-five years, the great majority of the larger pines will have disappeared, leaving more or less of stumps easily managed; but there will still be standing pitch pines that have turned to lightwood, with stumps that no puller yet invented can get out. As soon, too, as the vitality of the original forest growth is thoroughly destroyed, the land is inclined to throw out a second tree growth in which the persimmon and wild cherry are prominent. This is generally sprouted down with axes, cutting at or above the surface; the root is not destroyed, and when the broom-sedge fallow, which has followed the exhaustion of virgin fertility, is broken up, the reclaimed "old field" is often infested with persimmon and wild cherry roots, nearly as large as a man's thigh, and of a strength and hardiness that makes excellent cogs for machinery.

In this condition of things an average pine land plantation, with its proportion of new ground and old field, is not a promising place for the introduction of complicated and delicate machines for cultivation. On the other hand, a stone as large as a pigeon's egg is not to be found; the soil is light and friable, and the lands lie so level as almost always to admit of hill or check culture, in which the value of improved implements in saving hand work is chiefly attained. The proper removal of the tree growth is the only difficulty in the way, and improvement in the economy of production undoubtedly lies in the direction of labor-saving machinery. Every progressive planter will make such advances in this direction as he can, bearing in mind Dr. Franklin's experience in the purchase of his whistle.

Much progress may be made in fitting the land for improved implements by observing the following practices: In cutting down the scrub growth and smaller pines of the original forest, cut so near to the surface that the stump will not strike the whiffle tree, thus permitting the plough to run closer up and gradually loosen its hold in the earth: and in the annual cleaning up of fallen limbs, bark, and roots

pulled up by the plough, pile and burn on a stump. Sometimes the stump will thus be entirely consumed, burning out like a candle in its socket. In sprouting the second growth, always dig around with the hoe, and cut the root with an axe, at least ten inches below the surface, thus effectually destroying its vitality. Get all your rail timber and fuel each winter from the girdled trees of the new ground, and make such progress as opportunity permits, in eradicating from your old fields the remaining stumps by digging around and firing them. This is by no means as tedious a process as would be at first supposed. Draw the earth a foot and a half or two feet deep from around a number, and let them stand till the moisture has somewhat dried out of the wood; then fire them, and one man with an axe, chipping and helping the flame, can keep a number of stumps burning at once.

Attention has recently been given by Southern inventors to certain seeding and other machines, suited to the condition of our lands as described; and some quite useful ones have been produced. A few which the writer has tried will be noticed.

The Dow Law Cotton Planter and Guano Distributor does its work very well, putting out fertilizers evenly, or opening, sowing and covering the cotton. It is simple, cheaply constructed, and can be made by any plantation mechanic for six or seven dollars. It is sold for three times that price. Whitner's Seed Planter is more complicated, and is arranged to put out fertilizers, or plant any seed from turnips to corn. For planting cotton, or distributing fertilizer, it is defective in having a belt, instead of a connecting rod, to give motion to the stirrers; the belt is constantly slipping. As a corn planter, or for smaller seeds, it does well. It is built of better material, and with more care than the Dow Law, but is still entirely too high priced for its value. Forty dollars was the price paid for it. Both of these machines are defective as cotton planters, in requiring the freshly thrown up bed to be blocked off before they can run. This adds exactly fifty per cent. to the cost of planting, and could be easily avoided by giving a steadier rolling base to the machine than the single wheel affords. In putting out fertilizers for corn or cotton with these machines, there is a waste of horse power fully doubling the expense. A laborer drilling by hand through a funnel, will put out as much in a day as will one of these machines drawn by a horse, though not as accurately. The fertilizer is light, and with the sacks placed at frequent intervals over the field, a slight machine to be pushed by hand power is the desideratum.* Or, it would be better still, if the fertilizer distributor could be attached to the stock of the plough that lays off the opening furrow. The difficulty here is to get motion for the stirrers. An ingenious attempt to get this from the whiffle tree was tried in an invention by Armstrong, some two or three years ago, but the source of movement was not decided enough. Billing's Corn Planter, (a Northern invention,) which was to plant the corn, deposit the fertilizer near the grain, and cover all at one passage, did not give satisfaction.

There is nothing planted in which the regularity of machinery effects so great a saving as the field pea. In planting it amid the standing corn, the most approved

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* Since writing the above, West's Guano Distributor, which appears to fill this condition, has been brought to the writer's attention and procured for trial.

practice is to run a furrow with a shovel plough in the centre of the alley, in which the peas are drilled and covered by the last two furrows of the sweeps in ploughing out the row. At the next working, a sweep siding the peas and another the corn, the plough work is finished, leaving every thing flat, and the drill of peas is, to a considerable extent, a preventive against washing by the August rains. The Whitner Planter puts the peas in this planting furrow accurately at any rate desired. In sowing peas for green manuring, the same machine effects a saving of about forty per cent. in seeds. The machine is run in every third furrow of the half shovels breaking the land; the next furrow covers the seed; and the process goes on, one machine being required to every three ploughs. One and a quarter bushels of peas thus placed in the ground, will give as good a growth of vines as two bushels of seed sown in the usual way, broadcast, upon a rough field, and ploughed in without subsequent harrowing. At the common price of peas, the saving per acre is seventy-five or eighty cents—no inconsiderable item. In both of these cases, however, there is a waste of horse power; and, as in distributing fertilizer, a hand machine would do the same work.

Transplanting corn or cotton, has great advantages over the method of replanting. Indeed, the last seldom comes to anything. Ellerbee's Transplanter does this work well, and the transfer, if carefully done, seldom checks the growth of the plant. This machine, however, is slow in its work, requiring two distinct operations: first, the missing hill is to be found and the hole made; then an extra plant is to be sought, taken up, and transferred to the prepared place. An invention by J. D. Robert, of Mississippi, styled the American Transplanter, proposes to do this with half the work. The first extra plant that offers in the row is taken up by this machine, carried till a vacancy is found, and then the hole is made and the plant deposited at one thrust. This invention has not yet been fully tested by the writer. When one reflects that in an acre of cotton planted three and a half feet by fifteen inches, there are over ten thousand hills, and that with anything short of 15 per cent. missing, it depends very much upon the character of the seasons, whether the crop is a full one or not, it does seem that either to transplant or replant cotton under such circumstances the game is not worth the candle. If the stand is very bad the process of transplanting is so tedious that generally it is best to plough up and plant over. It is only, therefore, when unusual leisure offers, or in very high farming, that a transplanter for this crop is of much service. With corn, however, planted at wider intervals, and with the stand having much more influence upon the yield, an efficient and speedy transplanter is invaluable.

The recently introduced ploughs of Southern inventors have marked decided improvement in that indispensable implement. There is, probably, not much difference in the merit of most of them. The writer uses with satisfaction Brinley's two-horse ploughs, for fall and winter ploughing, on all lands in which the roots are sufficiently decayed to run cast ploughs. His one-horse turning ploughs are of wrought iron blades, on a Brinley stock, procured of Jas. Stogner, of Augusta, Georgia. The Dickson sweep has not given satisfaction in his hands; the ordinary buzzard wing sweep, without the projecting nose, and with the wings set to turn

dirt freely, is preferred. Brinley's straight shovel, or planting plough, is an admirable implement. Murfee's sub-soiler runs wonderfully light, and does good work. It is only upon spots in a pine-land plantation, however, that sub-soiling will pay. In the selection of ploughs, the cast are better than the wrought wherever the condition of the land permits their use, from the fact that made in a mould the proportion and relation of the parts is accurately uniform with the model which is desired. Hand-made ploughs can not have this merit. Different soils wear steel faster than iron, and sometimes the reverse. A little observation will decide which is preferable in the particular case. The Scotch hinge harrow has the advantage of being suitable for two horses, or by dividing it for one. All peg-toothed harrows, however, have the disadvantage of requiring one to go too often over land at all rough to get it in order. What is needed is something that will pulverize clods at one passage, even though the horse power must be increased.

Of the other necessary machinery, there is little to be said. The wagons, carts, gins, threshers, corn shellers, cotton presses, as well as the smaller implements, the hoes, spades, etc., in use, are generally well adapted to these purposes. There is, however, one item in the outfit of a plantation to which sufficient attention is seldom given, and that is the workshop. All necessary wheelwright and blacksmith tools, for at least the repairs of the place should be provided, and this work done at home promptly as needed. An overseer who is not a sufficient mechanic to do most of the repairs of a plantation is deficient in an essential of his calling, and both he and the planter are the better for some knowledge of the science of mechanics—enough at least to give the most effective direction to both brute and human labor, and to use understandingly the machines with which his work is done. There are two very excellent hand-books on this subject which are recommended: Todd's Young Farmers' Manual; and Farm Implements, by J. J. Thomas.

The heavier machines, such as the gin, thresher, and grist mill, are necessarily driven by power; and many of the lighter, as the corn sheller, straw cutter, etc., are advantageously worked in the same way. For a small place, when not exceeding two or three mules are kept, horse power is the best; and the gin-house and barn should be combined somewhat after the fashion of the barn of the Northern States, where all the operations of preparing the crops for market or consumption are conducted under one roof. When the plantation is larger, water power is preferable if it can be had, on account of the bulk of the crops and the amount of preparation to be done. This always necessitates a separate building removed from the farmstead, and, consequently, increased transportation of that portion of the crops intended for home consumption. When water power is not to be had, steam may be substituted; and here the great advantage of having the barn and gin-house combined in close proximity to the cattle sheds may be retained. In consequence, however, of the inflammable materials of which our buildings are usually constructed, the careless character of our farm laborers, and the valuable nature of the crops, the invariable custom is to have the gin-house detached whatever power is used. Perhaps the homely maxim of not carrying all of one's eggs in the same basket may justify it.

The preparation of the crops for market, and for consumption on a cotton plan-

tation, requires as much wear and tear of horse flesh, where that power is relied on, as in making the crop. Besides, with the animals thus employed, little or no fall and winter ploughing can be done. When the three field rotation recommended in a previous number is practised, the land for the next cotton crop is in a weed fallow the previous fall; and if the mules are not in the gin, by doubling them before two-horse ploughs this fallow is then broken up in the best manner, at the most advantageous time, and with an economy of hand labor. The ploughmen which are the least efficient as cotton pickers are put to this work. The cheapness of water power, and its requiring no skilled labor in its application, renders it preferable to all others when it can be conveniently had. Steam is expensive, and an engineer who can make most of the smaller repairs is indispensable, when, perhaps, the nearest machine shop is fifty miles away. It is difficult to say at what size of the cotton crop its employment is warranted. When fifty bales are made on the plantation is probably the minimum. In the increase of small cotton planters, which has taken place of late years, a considerable quantity of cotton to be ginned on toll may be counted upon; and the locality sometimes makes the grist mill a source of profit. In passing, it is well to allude to the great value of the grist mill in grinding the corn fed to stock. Numerous accurate experiments appear to have settled the value of corn meal fed to hogs at 33 per cent. above corn in the ear. The writer's experience satisfies him that it is fully as much in feeding oxen, and about twenty per cent. in feeding mules. Besides, it enables accuracy to be observed in the quantity fed, and accountability to be enforced in the consumption of the corn crib.

The following is the cost of a set of plantation machines, purchased and put up in the first year after the late civil war, and driven by steam:

Mill building	$1,464 96	
Engineer's Cottage	538 36	
Fencing and alterations	114 08	$2,117 40
Ten-horse Engine and freight	$1,464 75	
Pump	60 25	
Shafting	221 45	
Belting	139 58	
Grist Mill	473 00	
Corn Sheller	39 55	
Fan	43 00	
Thresher	45 00	
Gins	371 88	
Armstrong Press	371 21	
Sundries	119 99	
Machinist work	164 00	
Blacksmith work	50 00	3,563 66
		$5,681 06

The cost would now probably be in the aggregate 25 per cent. less. The annual average of 500 lb. bales ginned and packed at this mill since 1866 has been 175; and of corn ground, 2,130 bushels, at a cost, in current expenses, of $2 86 per bale,* and 12½ cents per bushel. The amount of oats, &c., threshed has not been accurately noted, and accounts have only been kept with the gins and grist mill. The profit from these, which has averaged 15½ per cent. per annum on the whole investment, is injuriously affected by the capacity of the mill being greater than its business. All repairs have been charged as current expenses, and they have been thoroughly and promptly made. There is, notwithstanding, a depreciation in wear and tear both on building and machinery, and there has been no insurance at any time.

We have now glanced at all the items of the planter's capital, except the proportion of current cash needed to carry on his business. That will be discussed in a later article, when the balance sheet has exhibited in detail the expenditures of the year.

In our next, some consideration will be given to the employment and application of labor.

LOW MIDDLING.

A Free and Easy Chat about the Seasons.

That knowing individual, "The oldest inhabitant," has declared that "he has never known such a winter as the last." Now albeit this has been the common declaration of that old gentleman, to a time back "whereunto the memory of man runneth not," we feel inclined to give in that he is right. We have had nothing but unreliabilities since "old Probabilities" took charge of the weather; and if the government can't make a better job of it, we hope it will give it up. But jesting aside, the seasons have become a serious matter, and as the world is being revolutionized—coal being sent to Newcastle, and syrup from Boston to New Orleans—we had better be looking into this matter a little more closely.

The last day of Autumn (30th Nov.) we had a sudden blow up. A regular norther came down upon us, and the mercury fell to 11° at day-light. This was terrific, and we have had no change so sudden or violent since. All the changes have been sudden, generally northers; and on several occasions the mercury has fallen to 14° and 16°, and stood at it for days. It is a little remarkable that some of the coldest spells have been accompanied by winds from the south-west—regular icy blasts. Has old Boreas swept round, or is he just boxing the compass by way of variety. Verily the wind bloweth where it listeth, and no man knoweth whence it cometh or whither it goeth. Can any one gainsay this ancient proverb?

March 20th had rain—warm, with thunder—wind S. W., clouds veering round to N. W. with a little hail—blow off from N. W., and on 21st blowing a gale from

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*Engineer.....98.8
Hands.....96.7
Oil.....7.6
Fuel.....22.2
Repairs.....60.7

$2 86

N. W., cold and unpleasant; 22d, warm and pleasant; 23d and 24th, very warm, wind S. W. Monday night, 24th, heavy rain with thunder; 25th, warm, mercury 60°, wind S. W., at night close warm clouds passing round north, with thunder and some rain; 26th, wind N. W., cold and blowing a gale all day, night wind lulled and mercury fell to 32°; 27th, at sun-rise, mercury 28°, ground hard frozen, cirri strati clouds on all sides, wind N. W. The clouds have a snow look, and we will doubtless hear of hard times elsewhere. Speculations: It is the belief of a goodly number of weather-wise people, that the equinoxtial is a type of the seasons which will prevail until the next equinox, and we are rather inclined, from many years' observation, to conclude that there is something in it. If the present equinox is to indicate the coming season, we have not a very propitious indicator. We will have little rain, with stormy and cold clear-offs. The farmer should take timely warning, and make the best of the season; keep the plough moving, and let it go deep, put in the fertilizers freely and cultivate as rapidly as possible.

The effects of the last winter have been disastrous to small grain on all soils subject to "spew up;" the mulatto lands are very liable to it, and we have heard great complaints of the oat crop being killed that was sown in September. Wheat looks badly, is thin, and has grown very little. Small grain really has done very little until the last two or three weeks. Oats sowed a month ago have just come up. Black-birds and larks have been very destructive too. The winter has been very severe upon all farm stock. The epizootic, if it did not kill many horses, weakened them very much, and they seem short winded and easily distressed by any severe work. The cattle look badly, and a good many have died from some disease akin to the epizootic.

The winter has been equally hard on sheep. Bad fences and lovers of mutton, not to say anything of "Tray, Blanch and Sweetheart," are not very favorable to wool growing. Sheep will ramble, and the "fruges consumere nati" population will eat and "de questibus non est disputandum." Hogs have, as the boys say, pretty well "gone up," since we have located our corn cribs in the West. The few fat shoats are *pets*, and the razor back and long snouts being on the root hog or die system, are few and far between.

The birds. What has become of many of our favorites? Has their instinct warned them to go farther south, in search of a more congenial clime? The children complain that there have been no robins. The mocking bird, which used to nestle in the shrubbery about our homestead all the winter, and cheer us up during many a sun-shiny day in mid winter, has deserted us. It is now near April, and not a note of melody have we heard, but from a solitary thrush, who seems half afraid to trust his tuneful voice. But for the cheerful little song sparrow, the chirpy wren and rolliking red bird, our matins would be as dreary as mid winter. St. Valentine's day has come and gone, and birdies have not paired off, the partridge is still in covy, the doves in flocks, and few show any signs of building nests and preparing for their increase.

The farm work. Every thing is behind hand; corn cribs empty, long forage scarce, barley patches few and bad looking, farm implements out of order, blacksmiths scarce and unreliable, young mules to break, and every thing to fix up.

When it was cold, it was too cold to work, and now when everybody ought to be ploughing, fences are to be fixed, manure hauled to the field, gears repaired, plough stocks mended, wagons rigged up, and every thing else put in order. After the closing out of the cotton crop, up to the beginning to plant, Sambo will not budge in the way of work. "Carpe diem" is his motto, and he will die by it. The money for last crop is pretty well out. More mules from Kentucky have been sold in the country than for many years, and at good round prices. Ready-made shoddy, poplar bark soles, and split-leather upper shoes, carpet-bags and trunks, (every darkie wants a trunk now), western bacon and corn, and all manner of gew-gaws and gim-cracks, have depleted the country. A large amount of fertilizers our own Charleston, and many others from Baltimore, New York and New Jersey, have been bought on credit, and stand as a set-off against the next crop. How it will rain at the autumnal equinox! NOUS VERRON.

The Industrial Development of South Carolina.

We have read with great pleasure, "An Essay on South Carolina," by J. P T., published in the Columbia *South Carolinian*. Its length, and the crowded state of our pages prevents us from copying it in full, but we cannot refrain from making a few brief extracts from it:

THE SLAVE CIVILIZATION OF THE SOUTH.

What is known of the slave civilization of the South, was, of course, shattered when the Confederacy fell. It died at Appomattox. At least, all that was mortal in it died. And here we may remark, that, in our judgment, the peculiar civilization which was born of this institution of African servitude, fell after it had reached its highest point of development. Had it not fallen when it did, it would, we maintain, have developed vices in excess of its virtues, and whatever of benefit it had accomplished would have been obscured by its vicious and injurious tendencies.

THE NEW CIVILIZATION OF THE FUTURE.

Without further discussion upon this matter, the point is, that we have here in South Carolina, a new civilization to establish, and it is incumbent upon the people to adapt their action to the changed order of things that confronts them. It is obvious that the needs of the State are, *par excellence*, material in their character, and that our regeneration must come from utilized industries and developed resources. Neither the pen, nor the voice, nor the sword can help us so much as the plough, the loom and the anvil. The past history of the State shows how utterly ineffectual are mere argument and oratory to uphold State creeds and establish State policies. Whilst our Southern statesmen cemented with logic and adorned with rhetoric the political theories which they entertained, their cooler, more calculating and more sagacious rivals in the North labored to secure political advantages by material methods. Thus, when the trial came and the issue was joined, it was the wealth and numbers of one section that prevailed over the limited resources of the other—limited save in valor and devotion.

It becomes us, therefore, to abide by the lessons of the past, and to adopt henceforth a statesmanship which, whilst it shall not be less high-toned than that which

has passed away, shall be more practical and sagacious. Let us henceforth labor to throw up around our political ground, "the solid muniments of wealth, numbers, activity and popular intelligence." Just as Magna Charta was maintained by the same power that had wrung it from a reluctant monarch, so must our former influence be upheld by those material agencies which must be employed to win it back. What, then, it may be asked, do we need to repair our broken fortunes and heal the bleeding wounds of war? The answer is contained in a nut-shell. The primary need of the State is that wealth which shall spring from the development of our varied resources. Not upon agriculture alone must we rely. The interests of shipping and mining and manufactures must all be magnified. Our industries must be vitalized and our pursuits diversified.

PRACTICAL EDUCATION AS A MEANS OF DEVELOPMENT.

One of the means we hold is contained in the right kind of *popular education.* It is in vain to expect the State to realize the advantages of industrial wealth without the application of science to the useful arts. Classical attainments are certainly to be highly prized, and the amenities of polite literature, contributing, as they do, to elevation of thought and taste, and to "the humanities" in general, cannot with propriety be ignored in any sound educational scheme.

But we assume that it will be conceded that education should be adapted to the public wants; that the leading subjects of instruction should be selected with reference to the popular needs and necessities. Such being accepted as the principle by which our educational policy should be governed, it follows that education in the State should be largely practical and scientific, embracing in addition to the classics and abstract philosophy, such departments as civil and mechanical engineering, mining, applied chemistry and cognate subjects. Throughout the South the whole intellectual capacity of the youth should be united; and, to accomplish this, the Southern mind must be trained in a scientific curriculum.

THE DIGNITY OF LABOR MUST BE ACKNOWLEDGED.

In the second place, it is essential that all forms of honorable and useful labor be invested with due dignity. Nor in this connection has the abolition of African slavery entailed any disadvantageous influences upon the State. On the contrary we affirm that as respects the question of labor, the result of such abolition has placed us upon higher and better grounds. It has lifted us to a more desirable place. No observant progressive mind in the South, that can divest itself of the influences of the dead past, will lament that slave labor has been abolished in the South.

THE GOOD AND THE EVIL EFFECTS OF SLAVERY.

Doubtless the institution of African slavery had its peculiar mission to perform in the economy of an era that has passed away. Doubtless it exercised a conservative restraining influence that effected good results in the workings of the General Government. But, upon the whole, it is obvious to our view that the peculiar institution was no real blessing to the South.

It is true that there grew up under its influences a type of men and women who illustrated much, respectively, of the manhood and the graces of humanity—and who exhibited high culture as well as a sterling individuality. But the same soil, whence grew the strong plant and the beautiful flower, produced the noxious weed. Upon the whole youth of the land especially was the effect in many respects unfavorable. Too often was it that the brains were taken from the head, and the muscle from the arm, whilst native resources were left undeveloped, and strong energies remained latent. Hence, as we reason, there exists no good cause to regret that we have lost property in the labor of the African. On the contrary, wisely accepting the result and exerting our own capacity, we shall find the late emancipation of the negro the source of an enduring good in both an individuable and a collective sense.

Sumac—Gathering and Preparing for Market.

We have already published several articles on this subject, but believing it to be one of no small importance, and having lately received many inquiries in regard to the mode of gathering and preparing sumac for market, we now reproduce the following from the agricultural department of the New York *World:*

This industry has already reached important proportions in Maryland and Virginia, but there is much room yet to be occupied in the market, and the supply may be drawn from North and South Carolina, Georgia, Alabama, North Mississippi, and even Southern Missouri. Previous to 1865 but little American sumac was used; now nearly 4,000 tons are drawn from our old fields and forests, yet at the same time the consumption has largely increased, and there is yet an amount imported exceeding $300,000 in value. All this and more can be furnished from home sources if industry and energy will only attempt it.

The upland sumac is that preferred for market purposes. It is of three species the stag-horn or *Rhus typhina,* which grows to a tree eighteen to twenty feet high, and the smooth or *Rhus glabra.* The *Rhus copallina* is also used; it is sometimes called dwarf sumac. The swamp sumac is not considered of value. Of these, the first has branches of a hairy appearance like a stag's horn, the two latter have little bristles or hairs on the berries. These sumacs generally grow on red lands derived from primitive rocks.

The time to gather is before the berry is ripe. Gather only the leaves, and be careful to keep out the berries. Dry in the air, taking care to keep out rain and dew. Also do not have the leaves too thick, as they may heat, and it is also best to stir them several times a day. No woody stems should be allowed to be picked or get among the leaves They add some weight, but take off greatly from the value of the sumac. When thoroughly dried it must be ground. This is done in mills, the stones of which run on edge, and there are numbers of them in Maryland, Virginia, and one at Greensboro', N. C. As dried, before being ground, it is worth about 1½ to 2 cents per pound, as may be its cleanliness. When ground and sent to New York, first-class American sumac will sell from 4½ to 5 cents per pound by the ton.

When the business was first commenced, a great deal of poor sumac was sent to New York. A bad name was given to the article, and the price was very low, but we are informed that one manufacturer in Winchester gets as much for his article as the best Sicilian. Southern sumac is richer in tannin than the Sicilian, but there has not generally been enough care taken in its preparation for market. After grinding, it should be packed in bags containing 162 pounds. The bags, to hold this quantity, should be cut 40 by 60 inches. That considered best has a light green color.

There is room for a dozen or more of these mills in the South, and the sumac for them is daily going to waste. The necessary machinery, buildings and power need not cost as much as $5,000, and if grinding only 200 tons a year, would pay handsomely on that investment. The price at the mills in Virginia ranges from 1 to 2 cents per pound, and if properly prepared will readily sell in New York at 4 cents per pound. There certainly must be a profit of $20 per ton.

The consumption every year increases, and England alone uses over 20,000 tons. There is no reason why we should not only supply ourselves, but also import some to Europe. At present the supply is drawn entirely from the wild shrub, but the time will come when it will be profitable to plant the trees for their leaves. It is done now in Sicily, and where land is cheap it may be done here. The chief use of the American is for dyeing, as from careless preparation all of it does not answer

for tanning morocco. But, as we have stated, some of the American is now well prepared, and much of the rest will eventually imitate that example. It produces a fawn color, a rich yellow, a peculiar shade of green, and a red. The best and richest in tannin is found furthest south, hence that found in the Northern States has but little value. The berries are used to make a wine, but as the leaves should be picked before they are ripe, both cannot be saved.

An Experiment in Cotton Planting.

Your full and able corps of correspondents suggests to an outside contributor to your columns the propriety of conciseness, if he would escape the fate of those who discourse in print too diffusely on matters agricultural. I will, therefore, without further preface, give you the result of an experiment in cotton planting, which, I think, will interest your readers. I must premise that the experiment was made by a young man of very limited means, who, in adopting the profession of agriculture, recognized the supreme importance of bringing to his aid whatever of practical knowledge he could command by the study of Agricultural literature, and ballasting this knowledge by a due proportion of common sense.

The great grand-daddy system of farming in which the moon is regarded as a kind of delphic oracle, he remitted to the lumber room of obsolete curiosities, but to the facts.

Location about ten miles northwest of Greenville, S. C., a section of country too near the mountains, it was generally believed, to allow of cotton planting successfully. As general belief is sometimes in fault, it occurred to him to test the ground on which it was based. Thorough preparation of land, and judicious application of fertilizer, gave on 9 acres, the following result: 5 bales of cotton averaging per bale 397 2-5 lbs.; cost of 1 ton Etiwan Guano in Greenville, $69; cotton sold for $325.76; paid for fertilizer $69—realizing $256.76, or $28.50 cash return per acre. The land on which the cotton was planted, was upland capable of producing not exceeding 7 bushels of corn per acre,

I will only add that the "general belief" as to the *unwisdom* of planting cotton in this section has received a severe shock, and the owners of old pine fields are, and with good reason, congratulating themselves on their ownership of land capable under a system of enlightened cultivation of producing cotton, both in quality and quantity, such as to induce the hope on their part, that henceforth the advent of tax-paying time will cease to be suggestive of painful and perplexing thoughts

I have not forgotten my implied promise to be concise, but I must add a few more words.

The young man herein alludod to, is preparing to plant the present season on a larger scale, and that he may have it in his power at the end of the season to estimate fairly his "net profits, he is keeping a debtor and creditor account of his farm work using for that purpose, the "Rural Accountant." Should his experience promise to be of any value, it will, in due time, be at the service of the readers of the Rural Carolinian.

Q. E. D.

Frequent Stirring of the Soil Increases its Fertility.

In looking over the agricultural department of the March number of the *Country Gentleman*, published at Albany, N. Y., my attention was attracted to the advertisement of a Northern agricultural implement manufacturer, headed "Harrow your Wheat"—which, doubtless, embraces the entire subject of the surface cultivation of all growing crops, a practice so common at the North where lands are dear and labor scarce, that the small farmer is obliged to consider in all its various phases the economical application of labor—"that is to say," how to produce the largest number of bushels on the smallest acreage, with the greatest saving of labor and expense, and with the *least exhaustion of the soil*. This has led to the invention and introduction of a large number of improved implements, which do away with the old-fashioned hand-labor system, that could only thrive on new and cheap lands, when prices of products were above the average—the old land, when exhausted, being exchanged for new clearings, until the increase of population and settlement compelled their renovation by a thorough system of improved farming that was remunerative, and at the same time self-sustaining; since which, the soil has been gaining yearly in richness and fertility.

The idea so common among Southern farmers, that they must put on the land as much as they take off, in some crude or concentrated fertilizer; such as lime, guano or barn-yard manure, is, to a great extent, erroneous. It never occured to them that there are other sources of fertility, that the atmosphere is full of the essence of these fertilizers from decomposing vegetation, and in gaseous form, in which nature can distribute it to the greatest advantage and in the right places, and when and where it is needed, if the farmer will only attend to the surroundings and give nature a chance.

All plants are nourished principally at the roots, through the soil; hence the necessity of frequent and constant stirring, to prevent the forming of a *crust* on the surface, which *cuts off* the action of the atmosphere, through the porous soil, where the impregnated atoms are carried, to nourish and vitalize the plant. The fresher the soil to the surface, the more channels there are to drink up from the atmosphere this better than liquid manure; the latter every time closes up the channel behind it, while the gaseous fertilizing atmosphere leaves the channel open through the soil like a honey-comb, only closing it *when a moistened, then baked, surface, forms a crust*, which it is the farmer's business to disturb.

The harrowing of wheat, barley, corn, oats, or any growing crop in the spring, *breaks the hard packed surface*, thoroughly pulverizes and loosens the soil in and around the plant, destroys the little weeds just forming *in the crust*, and prevents them from robbing the wheat, which being strongly rooted, is not injured by the very numerous small round slanting teeth of the harrow, and at the same time it opens up the avenues for nature to supply the necessary food to rapidly insure its growth from the overladen atmosphere, a source that cannot be exhausted; and this is why it increases the yield from five to ten bushels per acre, as claimed, (in which my experience fully coincides,) without exhausting the soil.

May our Southern farmers take advantage of these ideas. Then will our part of the country, by nature so favored, with her genial clime and fertile soil, hold her true position among the sister States, and not until she has adopted a higher standard of improving farming. G. G. SMITH, *In the American Farmer.*

An Illinois farmer, who shipped 160 bushels of potatoes to Chicago, and received in return $10.40 as his share of the $60 they brought in the market, the rest going for freight and commissions, thinks the "middleman" stands too far towards the other end.

The North and the South in Farming.

Mr. Fletcher, one of the editors of the *New England Farmer*, who has been spending the winter in South Carolina, for the benefit of his health, thus writes of the relationship of the North and the South, agriculturally considered:

As we have no longer a divided country; as the line between the North and the South is rapidly growing more and more indistinct; as the great cause of misunderstanding and ill-will has been removed, and the people at the South, as well as at the North, rejoice that it is so; as South Carolina, with a square mile to each 19 of her inhabitants, not only invites, but urges by special inducements, the people of Massachusetts, where a population of 186 are crowded on to each square mile of territory, to come here and occupy her vacant lands, enjoy her mild climate, and help restore her waning prosperity,—I have assumed that farmers who are wallowing in the unfathomable snow-drifts of the North, and who watch the vibrations of the mercury as it fluctuates between zero and the solid state, are not altogether indifferent to the crops and plantation life of those who reside where the ground is seldom whitened with snow or stiffened with frost, and where during this unusually severe winter the mercury seldom sinks to 20° above the zero mark—14° on a single morning, being the lowest reported in this section; and where, so far as my observation goes, the people are fully as healthy as in New England.

The book-farming portion of the Southern agricultural people believe that Northern farmers will help to reduce their theories to practice; that they will introduce the more extensive culture of small grains, grasses, and stock. The practical, or rutical farmer, if I may coin an adjective, desire to dispose of a portion of their unwieldly plantations—one to two thousand acres being not uncommon—from the idle portion of which they now realize only a harvest of taxes. This class sees the need of a denser population to help them support better schools, better roads, etc., as well as to produce the "supplies" for which they are now largely dependent on the West.

Notes about Cotton.

Cotton owes its kingship quite as much to the tenacity with which its fibres adhere to one another, as to their length or fineness; and were it not that the fibre produced by the *bombax*, or silk-cotton tree, is too smooth, cotton would find in it a powerful rival. Cotton-wool is the downy bed in which the seeds of the cotton plant are enveloped, and is the product of hot countries. It has several varieties, that cultivated in Algeria and in Southern Europe seldom attaining a height of over twelve inches, while at the equator the plant grows as high as an apple-tree, and bears a fruit twice as large as that of the Algerian species. The cotton grown in the East Indies is of very inferior quality, its fibre being short and hard; yet it was largely used in manufacture, during the war in the United States. Chinese cotton is yellow, and hence the peculiar color of the fabric called nankeen.

The cotton plant is probably a native of Africa, and Livingstone found it in the interior of that country along the banks of all the rivers. The ancient Egyptians doubtless imported from Abyssinia their cotton cloth for mummy-wrappings, and for the garments of priests and nobles, and from them the Jews inherited the employment of that texture for the robes of their priests; for, where the Bible makes mention of *fine linen*, we must read *cotton*, as flax does not grow in hot climates. From Africa cotton culture passed into Persia and Georgia; then into India, and from India to China. In the latter empire all the clothing of the poorer classes is of cotton, of extremely firm texture. Indeed, so strong is the cotton cloth manufactured by the Chinese, that it is impossible for a man to tear a piece of it across; and the people of China and India refuse to buy European cotton manufactures, calling them mere spiders' webs.—*Popular Science Monthly.*

Horticulture and Rural Adornment.

Horticultural Hints for May.

Though nominally a spring month, May, in the lower South at least, opens our long summer season, and we may now expect hot weather and perhaps drought. We must bear these facts in mind in planning and performing our garden work. Seeds planted now must be covered deeper than was proper earlier in the season, and seed beds where small seeds, which cannot be deeply covered, are sown, must be watered to promote germination. Shading the ground by covering it with moss or with a newspaper securely pinned down, till the plants begin to appear, may, in some cases, be necessary, especially with very small flower seeds. Weeds, and particularly crab-grass, will now grow with astonishing luxuriance, and unless the ground be *very* frequently stirred with the iron toothed rake or the pronged hoe, there will soon be trouble in the garden and work for a cutting hoe and trowel, as well as for the fingers. Our remarks on watering and mulching plants in our last number may now be referred to with advantage.

———Transplanting is one of the most important operations of the month, and success in gardening depends largely upon its proper performance. Well grown and thrifty plants are lost every year by thousands, from lack of skill and care in transferring them from the seed bed to their permanent positions in the garden. The best way to transplant both vegetable and flower plants, when practicable, is to take them up carefully with a garden trowel, with a ball of earth attached, so as not to disturb the roots, and transfer them to a hole of suitable size where they are wanted. If this be skilfully done and a little water immediately applied, they will scarcely be checked in their growth. This is best done immediately after a rain, but a thorough watering of the seed bed will answer the same purpose. Where the plants cannot be taken up in this way, the roots should be "grouted" with a batter composed of rich, black earth, or better still, a mixture of equal parts of fresh cow-dung, vegetable mould and wood ashes. Late in the afternoon is the proper time for transplanting. It is well to shade the plants for a few days after transplanting.

———Most of the garden vegetables recommended for planting last month may still be put in with more or less prospect of success, including in the upper country garden peas. In this latitude, there is little use in planting the latter so late as this. Snap-beans should be planted every fortnight or so, to keep up a succession of crops. Lima or Sieva beans may be planted any time during the month. Corn for roasting ears, okra, melon, cucumber, squash and cashaw pumpkin should be put in if required. Tomato seed for late fall bearing plants, cabbage and cauliflower for the fall crop, and celery, if you have not already as many plants as you require, must also be sown. For the cabbage and cauliflower seeds, the ground should not be rich, as we do not desire a rapid growth. In fact, plants from later

sowings are better, provided a stand can be obtained. Southern grown seed is best for the fall crop.

———Celery of last month's sowing may now be pricked out. Set the plants three or four inches apart, in a moist, partially shaded situation. Seeds may still be sown, but unless shaded and the ground mulched and frequently watered, there is danger that it will not germinate. Tomatoes and peppers should be transplanted in favorable weather, and watered and shaded. It is not well to have the ground very rich, if long continued bearing be desired. A heavy mulching of the ground under your early tomato plants will help to keep them in good condition. Kohl Rabi plants of last month's sowing should be transplanted, also sow more seeds. They will stand the heat better than either turnips or cabbages.

———The orchard and fruit garden will require watchful attention. Suckers, which will appear near the collar or crown of the roots, must be pulled off, and all too luxuriant shoots nipped back, to make the growth uniform and keep the head in good shape. A little attention to this will save you the trouble of severe cutting back next winter. If the trees have set too much fruit, it will pay you well to thin it out. Grape vines require similar attentions. Keep the strawberry runners cut off, and if you desire to lengthen the fruiting season, mulch and water the plants. They can be kept in bearing a long time by these means. Young orange trees and banana plants should have a top-dressing of manure and be well mulched, applying both just after a heavy rain.

———As hot weather comes on, such potted plants as have not been bedded out, as well as all hanging baskets, will require much attention and the exercise of a good deal of judgment, to keep them in a thriving condition. In this climate, summer is a more trying time for window plants than winter. The coleuses and some varieties of the geranium are very difficult to keep in health. They must have sunshine, but not a full exposure to the direct rays of the mid-day sun. They should be arranged on a movable stand, so that the amount of light and shade can be regulated by a change of position on the veranda.

———Rose bushes and other garden shrubs will be much benefited by a top-dressing of pulverized charcoal and ashes. Prune the rose bushes when the blooming season is over, cutting off the old wood that has produced the flowers, to make room for a new growth. In the herbaceous department of the flower garden, weeding, transplanting and watering are the principal operations to be performed this month. Additional planting of some annuals, however, such as balsams, zinnias and nasturtians may be made; and dahlia roots may still be planted.

———Liquid manure has a wonderful effect upon garden plants, and may be used both in the vegetable and in the ornamental departments. The best time to apply it is just before a shower. For tender flowering plants it must be weak. A table-spoonful of guano, or a small handful of fowl droppings to a gallon of water will make it strong enough. Soap suds may be used in the same way.

Northern Horticultural Notes.

A LARGE COLLECTION OF GERANIUMS.

It rejoices me to see that the South is waking up to an interest in the making a reliable record of her best fruits to grow, and that, as I now see it, there will be such an attendance of intelligent fruit growers at the coming meeting of the American Pomological Society, who will each note and explain points and characters of varieties, so that our list will be as valuable to the South as it is now to the North, where it has recently been quoted as authority.

Returning now, according to promise, to Boston and its suburbs, I will write you briefly of the grounds of Wm. Gray, Jr., Esq., situate but about two miles from the heart of the city, and which for rare refinement and artistic improvement of natural features and attractions, has no superior. The smooth, green, undulating lawn, is here and there edged or bounded by irregular rocky banks, filled with wild shrubs and trees, then again toned to the highest feature of art by groups or masses of rhododendrons and flowering vines, azelias, etc. At present the green houses are filled with rare tropical plants, which I am told in summer are massed and tastefully arranged, each being carefully named, giving both beauty and instruction to those who walk and read. The elegant India Rubber tree, elegant *Musa*, cannas in great numbers, etc., together with his grand collection of young evergreen trees, and then his Pampa grass, twelve to fifteen feet high, rising, spreading and curving to the ground loaded with blooms, are attractions, as I have said, of beauty and instructive intelligence, no horticultural visitor to Boston should omit seeing.

But, again, let me not forget to note, among the many multitudes of gems of beauty and instruction here, Mr. Gray's collection of over eight hundred varieties of Geraniums, probably the largest in the world, and yet he has not them all, nor as yet do we think he knows all about how to grow and bloom the double varieties. He grows and blooms his tri-colors beautifully, as I was told, by cutting back his old plants, top and root, and repotting them, and the same practice I have found of benefit with the double flowering varieties. All my young plants give me exhuberant growth, but few flowers; yet when I take the plant from the ground in autumn, cut it back and put it in a cool place until about February, then take it up and repot it, cutting back the root severely and potting it as compact as possible. I find that once repotting brings it into a bushy, compact shape for planting out in the open border, and prepared with blooming germs that give me a great amount of blooms until towards autumn, when I have to go around every plant in the garden and cut its roots with a sharp knife, at the same time cutting away more or less of the branches of top.

THE PIONEER OF SEED MAILING.

But I must not longer keep you reading of Mr. Gray's grand attractions, for here in New York I find among her many seedsmen and florists, our old friend B. K. Bliss, formerly of Springfield, Mass., from whence he was the first pioneer in the mailing of packages of seeds and plants to customers all over the land, a prac-

tice that now has become universal, but, perhaps, would not have so become had he not found it profitable, and the people by his act woke up to the fact that they, not the dealer, were getting the main benefit.

SOME NEW SORTS OF POTATOES.

Give credit to whom credit is due, and while so doing remember that Bliss was the first disseminator of the Early Rose, and others of Breese's seedling potatoes, of which the world at large have now partaken. He it was, also, who first put out the Sorghum, the Egyptian Beet, the Lilium Auratum, the Japanese Maize, the Moore's Early Concord Sweet Corn, all of which stand to-day among the best of their class, and who now is offering for trial some new varieties of potatoes, peas, tomatoes, etc., of which all economical and intelligent growers, doubtless, will avail themselves, for we all know that true economy and success belong to the use of the best material.

THE BEST LAWN MOWER.

I have looked over all the stores in Boston and New York, and I fail to find one equal to "Excelsior," with one of which I last year had a Bohemian laboring woman mow cleanly once a week an acre of undulating lawn, which she performed regularly within the space of time of three-fourths of a day, and my mower is now, apparently, as good for the next, and coming ten years, as when I bought it last April. In my next I will touch up other good things I see around Boston, and, probably, hint at some of the many promising items that I see elsewhere.

F. R. ELLIOTT.

Mrs. Planter in the Garden.

Spring time is pre-eminently the season for forming good resolutions—to be broken. Among them I beg a place for one to be faithfully *kept*. It is this: Mr. Farmer, with the first swelling of the buds, resolve in your heart that, for this year at least, you will place at the commands of your wife, (the help-meet allotted you from the first, better, or other than which, you will not find,) that you will place solely at the command of your wife some good old "Uncle," to dig and to delve at her gracious will in the spot you have called your garden. Select some simple minded old fellow that can use a spade, but by no means hamper her with a professional country garden. My suggestion is, that you will find him altogether professional, and in an unpleasant sense of the term, but be sure the man is able and willing to use the spade. Granted, this is not properly Mrs. Planter's province; granted, also, that a gentle succession of fresh vegetables is wanted the coming year—not a plethora, nor a sparseness of them. Let these health winners be about all your dinners, flanking them on every weak side; let them be a daily surprise and a daily delight, as they were not the year past. You have failed in this consummation so much to be desired. Trust it this once to Mrs. Planter, and place on her shelves Holmes, and White, and the RURAL. Place at her command this one man servant, and don't make her list of required seeds to lessen by so much the

acquired rubbish of a certain seedsman, as did mine last year. Try her fairly. She, too, may fail, but I think not if she but commence, for with the little seeds upspringing from the soil, there will upspring within her heart a kindly interest and zeal that grows with their growth—that knows no cloying, for the end is use and full satisfaction. Let some one make the poultry a specialty, the proceeds of which are not to be for sale, then fancy yourself next September taking your broil by way of a chicken, attended and graced as it should be, the most pleasant way of being involved in one. MRS. ———.

[The foregoing sensible suggestions were intended for an earlier number, but failed to reach us in time. Though now somewhat out of date, we trust they will not be without future benefit to those for whom they are intended.—ED.]

To Fruit Growers in South Carolina.

Having been appointed a member of the General Fruit Committee of the American Pomological Society for this State, it will be my duty to report to the General Chairman of that Committee, on the fruits of South Carolina. Any fruit grower, either on a large or on a small scale, can aid me by reporting what varieties succeed best in particular locality, including apples, quinces, pears, peaches, plums, grapes, figs, strawberries, raspberries, etc., with the time of ripening, quality of fruit, productiveness and power to withstand the vicissitudes of the climate; also, notes on newly introduced or originated varieties. An early attention to this request will greatly oblige, yours, truly, D. H. JACQUES.

Charleston, S. C., May 1st, 1873.

Seasonable Orchard and Garden Notes.

Fig Growing for Profit, in the South.

Fig growing for profit has yet to be tried in this country, strange as the fact may seem. We are fully convinced that when it shall be tried properly, fully and with that degree of perseverance necessary in any new enterprise, that it will prove a great success, and develop another distinctively Southern branch of industry. The absurdity of importing dried figs from Asia Minor into this best of all fig countries, is too great to be thought of without astonishment. Because we cannot dry figs in just the same way in which they are dried in Asia or in Europe, shall we say that we can not dry figs at all? If our atmosphere is too moist, or if insects be troublesome, we may find a remedy for both these evils in cheaply constructed kilns. We shall make mistakes at first, and fail to get the best results, but careful experiments will soon correct our errors, and make our dried figs equal to any in the world. In the first place, and before planting largely, we must determine

which are the best varieties for this purpose. Who will make experiments this season and report results?

Pansy or Heart's-Ease, (Viola Tricolor.)

It is not seasonable to speak of pansies with a view to their immediate planting, but having a magnificent show of the finest varieties (from Mr. Dreer's choice seeds) now in bloom, we are reminded of the frequent complaints which reach us of failure to get the fine growth, and great size and beauty of flower, which make the seedsmen's colored plates so attractive. There seems to be a general impression that truly fine pansies are never seen here in the South, except on Northern paper. This is a mistake. We have had as fine blooms this season as were ever represented by Vick or Bliss in their Catalogues, and others may have as good ones by the same means. At the proper time (next fall) we shall, if we do not forget, give full directions for growing pansies in our climate.

Supports for Flowering Plants.

Among the requisites for the flower garden, we must not forget trellises and stakes of various sizes and shapes. These are necessary everywhere, but especially so here where high winds and beating rains are so frequent. Often the beauty of a flower bed is utterly ruined in a single hour. This can, in a great measure, be prevented by having all plants which require support always securely tied up to suitable stakes or trellises. Seedsmen and florists sell elegant patterns made of wood and wire, which those who can afford the expense and would save trouble may buy, but such things are easily made at home—not so elegant, perhaps, but equally serviceable. Where cane-brakes abound, very good stakes of all sizes required in a flower garden may be had for the cutting, or they may be made of wood and painted, and will last a long time.

White and Yellow Tomatoes.

Our friend and correspondent F. R. Elliott, of Ohio, pronounces the White Apple Tomato insipid and worthless for the table. Mr. Elliott is high authority in all horticultural matters; but tastes differ and so do climates. The White Apple Tomato (and the same is true of the Dixie, a yellow variety) possesses less acidity and less of the distinctive tomato flavor than the red sorts; but it has here, under Southern skies, a delicate fruity taste, which to our palate is delicious. It is certainly anything but insipid. It is best, used as fruit—that is, stewed and sweetened; but, in this way, Dixie is even better.

The Wild Goose Plum.

This improved Chickasaw Plum is not so well known as it should be, for though inferior to the Gages, (which it is useless to try here,) it is by no means a poor fruit, and it can be trusted for a crop every season. It is not, as some have asserted, absolutely curculio proof, but it is comparatively exempt from insects and from rot. The fruit is of good size and a bright red color, which makes it very attractive as a market plum, and it sells readily wherever it has been introduced.

Excerpts and Comments.

A Wonderful Flower.—A flower has recently been described by an eye witness at Constantinople, which is so great a rarity that one is apt to treat it as a fable, and wait for the confirmation of one's own eyesight. It belongs to the narcissus kind of bulbs, and bears the botanical name of *Ophyrsmouche*. There were three naked flowers on the stalk hanging on one side; the underneath one was fading, while the two others were in all their beauty. They represented a perfect humming bird. The breast of bright emerald green is a complete copy of this bird, and the throat, head, beak and eyes are a most perfect imitation. The hinder part of the body and the two outstretched wings are bright rose color, one might almost say flesh colored. On the abdomen rests the whole propagation apparatus, of a deep dark brown tint, in the form of a two-winged gad-fly.

Whether this is a fabulous blossom or not, we cannot say, but it is remarkably similar to the *Espiritos Santo* of Central America, about which so much has lately been said, and which is as real as the lily and the iris.

Fruit Preserving in the South.—At a meeting of the New Orleans Fruit Growers' Association, Col. D. Dennet asserted that millions of dollars a year are sent north to buy preserves, while Louisiana ought to make and supply the markets of the North and of the world with jellies, pickles, marmalades, etc., and by this means add to the prosperity of the State. A few ladies did submit specimens of preserves at the last State Fair, and got a blue ribbon for their trouble, while the young man who shot a pigeon on the wing got a $150 gun, and the fastest gelding got a $500 purse.

This is equally true of other parts of the South. In fact, except in a few favored localities, fruit growing beyond the needs of the family can be made profitable in no other way than by preserving in some form.

Asparagus and Manure.—I have tried all kinds of manure for asparagus plants, and all sorts of treatment. Nothing, however, produced such a rank and thick growth, as fresh cow manure. We have often used horse manure, well rotted, and salt, and various other applications. But the pure cow manure, spread over the bed about three inches thick, proved the best. The year before last we had the most wonderful growth, and as we believe, entirely from this cause. We always leave our stalks until they are about one foot high before cutting them; we fancy they are much better, and we know we get three times as much vegetable food fit to eat.

This is correct, both in regard to the manure and the cutting; and, we may add, cut just barely below the surface of the bed. The white part is neither ornamental nor useful.

Foreign Grapes in Texas.—A correspondent of the Department of Agriculture, in Austin, Texas, states that since the war the attention of agriculturists in that State has been largely directed to the culture of the grape and other fruits. For a number of years, he says, experience has shown beyond a doubt that the climate of Texas is very favorable to the culture of the foreign grapes. A number of varieties are under cultivation, and have produced very fine fruit, even in years when the native grape has been killed by late spring frosts.

This is a confirmation of what we said in a previous number in regard to foreign grapes in the open ground. One of the best grapes for some (and perhaps many) localities in the South, is the Louisiana, a variety with a native name, but undoubtedly of foreign origin.

Applied Chemistry and Mineralogy.

All communications and notes of inquiry intended for this Department, as well as specimens of soils, fertilizers and minerals for analysis or description, should be addressed to Charles U. Shepard, Jr., M. D., No. 20 Broad street, Charleston, S. C.

Analysis of a Marl-Like Guano,

somewhat resembling Calcareous Tufa, from Phœnix Island, South Pacific, (presented by Messrs. Wilcox, Gibbs & Co.)

While moist, it is so soft as to be easily crushed to small fragments by the pressure of the hand; but, on drying, is firmer than most marls. It is more or less porous and open like tufa, or siliceous sinter. Color, pale buff. Hardness between that of gypsum aud calcite. G=2.201. Before the blow-pipe it immediately turns white, phosphoresces, and becomes incrusted with a semi-fused enamel. Heated in an open glass-tube it evolves much water, unattended by ammoniacal, or animal odor. Its powder when ignited in a platinum crucible emits a feeble odor, resembling that of the South Carolina phosphates when similarly treated, turns of an ash-gray color, and loses 14.33 p. c.

Analysis afforded the following result:

Carbonate of lime	44.48
Phosphate of lime	34.20
Sulphate of lime (hydrous)	7.61
Traces of magnesia, with chloride of sodium	0.91
Water and loss	12.80
	100.00

A second analysis gave the phosphate as high as 36.65.

The carbonate and sulphate of lime may be regarded as adventitious, leaving a compound of phosphate of lime and water, quite different from that of the ordinary stone-guano of the West Indies or that of South Carolina, whose essential composition is very nearly phosphate of lime 87 and water 10; whereas the present substance may be stated, as the result of two analyses, to be—

	(1.)	(2.)
Phosphate of lime	71.37	71.90
Water	27.83	28.10
	99.20	100.00

It is probably identical with the mineral described by me under the name of Epiglaubite, as occurring in the stone-guano of Mong's Island, on the Musquito coast, though the examples from the latter place were white, and wholly unmixed with carbonate and sulphate of lime.

As a phosphate of lime, I find it to be much more soluble in the citrate of ammonia than the pyroclasite, the latter being taken up (when acted upon accord-

ing to the usual method employed with this re-agent) to the extent of only 3 or 4 p. c., while 33 parts in the 100 of the Phœnix Island mineral are dissolved by the citrate. This result is agreeable, also, to the observations made in the laboratory of my son respecting the unusual solubility of the phosphates of lime in the Phœnix Island Guano, the uniform ratio of its solution being nearly identical with that here found in the supposed Epiglaubite.

CHARLES UPHAM SHEPARD, Sr.

March 27, 1873.

Analyses of Connecticut Seed-Leaf Tobacco.

The following analyses of the above mentioned variety of tobacco were recently executed by me for Wm. L. Bradley, Esq., of Boston, Mass. The samples, which I owe to the generosity of Mr. Thad. Smith, of North Hadley, Mass., represent the best quality of such tobacco. The sample A. came from the Connecticut meadows; B. from the sandy plain forming the first terrace above the meadow lands. The average analysis of the two is given under C.

Connecticut Seed-Leaf Tobacco.

Ingredients of air-dry Tobacco.	A. Sample from meadows, average of 3 analyses.	B. Sample from Sandy land, average 3 analyses.	C. Average of both.
	p. c.	*p. c.*	*p. c.*
Moisture expelled at 212° F.	9.82	9.11	9.46
Organic matter* expelled at low red-heat	66.95	62.90	64.93
Crude Ash	23.23	27.99	25.61
Total	100.00	100.00	100.00
* Yielding Ammonia	2.31	2.83	2.57

Ingredients of pure Ash, *i. e.* free from sand.	A. Average of 3 analyses.	B. Average of 3 analyses.	C. Average of both.
	p. c.	*p. c.*	*p. c.*
Phosphoric Acid	2.92	2.80	2.86
Sulphuric Acid	12.05	10.72	11.38
Carbonic Acid	18.45	20.72	19.58
Silicic Acid	2.02	1.20	1.61
Potash	27.41	26.09	26.75
Soda	3.80	1.46	2 63
Magnesia	4.03	4.40	4.21
Lime	22.82	26.98	24.90
Oxide of Iron	3.71	2.91	3.31
Chlorine	3.62	3.40	3.51
Total	100.83	100.68	100.74
Deduction for oxygen equivalent to chlorine	0.82	0.76	0.79
Corrected Total	100.01	99.92	99.95

In conclusion, I would state that the tobacco leaves whose ash consists largely of potash salts, burn much more freely than those in which the lime salts preponderate. The first mentioned sort is not apt to char, bnt yields a white and light ash; and is, therefore, given the preference in the market. The Stassfurt potash salts have produced beneficial results in the quantity and quality of the tobacco crop. Where they, either pure or incorporated in commercial fertilizers, can not be procured, it behooves the tobacco grower to make a liberal application of stable manure and such other fertilizers as contain potash, or of those chemical manures that tend to liberate this ingredient from its mineral combination in the soil.

S.

Laboratory for Analytical Chemistry, 20 Broad street, Charleston, S. C.

Foreign Agricultural Correspondence.

On some Antiquated Blunders in Rural Science.*

Reading the little book of Mr. Holmes, A. M., of Charleston, on the Phosphatic Deposits of South Carolina, I met with some quotations from Prof. Tuomey, and such propositions as the following:

"Whatever of organic matter the plant contains, must be in the soil. The best that can be given to the soil for the plant is the manure that contains the greatest number or quantity of the elements of the crop, trusting that if not absolutely wanting the others will not be lost. This, and the development by proper means of such substances as may already exist in the soil, are the only rational remedies against sterility."

* The following letter, which accompanied the MS. of Prof. Mussa, furnishes all the explanation which the reader will require, in regard to the publication of the article. It will give us great pleasure to publish anything that Prof. Mussa may send us, and we beg leave to assure Prof. Ville that he has many warm admirers in this country, whom he might reach through our pages.—Editor.

Talbotton, Ga., April 2, 1873.

Editor of the Rural Carolinian:—The accompanying essay, called out by Prof. Holmes' pamphlet on the character of the phosphatic remains about Charleston, we forward you, by request of Prof. Mussa, for publication in the Rural Carolinian.

While in Paris last summer, we met the distinguished author of this communication at the laboratory of Prof. George Ville, in the *Jardin Des Plantes*, by whom we were introduced to the learned French Savant, and to whose courtesy we were indebted for a visit to the *Institut De Seance*. Prof. Ville inquired of us something concerning the character and formation of the phosphatic rocks near Charleston; whereupon we promised, on our return to the South, to send them some information. On our arrival in Charleston we called on Hon. Geo. W. Williams, who presented us the pamphlet referred to, which we forwarded to Paris.

Prof. Mussa, of Messina, Italy, who is on a visit to Prof. Ville, has written this very able criticism on the theory of Prof. Holmes, and promises us another article, at an early day, which we may send you if desired. Both the distinguished gentlemen appeared very much interested in the subject under review.

J. B. GORMAN,
Editor of the Talbotton Standard.

It may be that some words of this quotation are not exactly the same as those of the book, for I quote from memory; but I can warrant for the exactness of the purport and meaning as it stands in the book (I think, page 47).

Now, without the least idea of finding fault, or criticising either the book or the author, and solely for the interest of science, I declare that such assertions as these are truly nothing but antiquated blunders.

Were all the organic matter the plant contains found in the soil, then vegetation could not have sprung out of the earth's crust in the beginning, for plants began before animals, and when plants began there could not have been any other plants before. No organic matter could have been found in the soil when vegetation began; and the way in which it continues is just the same as that of its beginning.

Do plants eat organic matter? Not at all. Plants do not eat, but matter is dissolved in the soil by their roots, and gas in the air by their leaves. But organic matter is not soluble, and so it cannot go into the plant to feed it and promote its growth. But what is organic matter? It is a combination of the elements of air and water, and according to the number of these elements, which compose it, it divides itself into two groups, the one called hydrates of carbon, which comprises all the products composed of the elements of water, hydrogen and oxygen, with carbon; the other is called albuminoides, which besides the same elements contains, furthermore, nitrogen and phosphorous, with some sulphur. Now, experiments expressly made to ascertain if it be necessary that such matter should be found in the soil for a plant to thrive, have excluded all doubt that, with the exception of nitrogen and phosphorous, none of the other elements of organic matter, or the organic matter itself, are at all necessary to be joined in the soil, as the plants find them abundantly elsewhere. There are two ways to verify this very easily, both by rearing plants in an indifferent medium with the addition of inorganic matter only. In the one case the plant is reared in pure water, in the other in a solid medium like pure sand. Let one take the following inorganic matter:

Water, 2 *litres*	2000	Epsom salts, or sulphate of Magnesia	·0¼
Superphosphate of Lime	·0¼		
Saltpetre, or nitrate of potash	·0½	Total	2002.0
Nitrate of Lime	·0½		

in a solution of $\frac{1}{1000}$ of concentration. Let a seed to germinate be put in the folds of a wet sponge, and then put the sprout in this solution. The plant will grow splendidly, and better than in any garden soil, rich with organic matter. The water must be distilled. The matter dissolved in it is altogether inorganic. There is no trace of organic matter in it; still the plant grows better than in the best soil. Let one sow the seeds in the most barren sand, and sprinkle it at times with the same solution, and the plant will grow better than in the most fruitful soil. Pure sand does not contain any organic matter at all. One may, beforehand, calcine it in order to destroy by fire every trace of organic matter that it may contain. It cannot then be true that whatever organic matter plants contain must be found in the soil, since a soil may produce plants in the best manner without containing the least organic matter.

But if not necessary, is it useless that organic matter be present in the soil?

Far from it. It is, on the contrary, a favorable condition for getting abundant crops, first for its physical properties bearing upon the fitness of the soil, then for its chemical properties, producing in the soil some reactions very useful to vegetation; lastly, as it gives to the soil in its own decomposition, some of the elements indispensable to plant growth, such as nitrogen, phosphoric acid, potash, lime, etc. However, to give these elements to the soil for the plant, it must beforehand cease to be organic matter; it must decompose itself and go over to the inorganic state.

Although, then, organic matter be a good condition for a soil in high farming, still on poor soils we must not despair of getting as good crops without it. It is enough to furnish it with some inorganic elements, such as nitrogen, potash, phosphoric acid, and lime in such a form that they contain also magnesia and sulphuric acid.

Neither is it true that the best manure to be given to soil is that which contains the greatest number or quantity of the elements of the crop. The greatest number of the elements of a crop are everywhere in the air, in rain water, and particularly in every soil in such overflowing quantity, that it is quite useless to give any more of them in the manure.

What are the elements of the crops? There are these fourteen: Oxygen, hydrogen, carbon, nitrogen, phosphorous, potash, lime, soda, silicon, iron, sulphur, manganese, chlorine, magnesia. Now of these, it is useless to give the first three, as plants have of them as much as they want in air and water. It is equally useless to give silicon as there is no soil that does not contain it more than crops can take for centuries. The same is to be said of iron, manganese, chlorine, soda. As plants take very little of them, they are in sufficient quantity in every soil, besides they are always in certain quantities in the impurity of the mineral salts of potash, in phosphates and in lime salts. Such also is the case with magnesia. There remain but nitrogen, phosphorous, potash and lime, which really can disappear from a cultivated soil, and which consequently must be given as manure. Let one take the most exhausted of cultivated soils; let him manure it with superphosphate of lime, nitrate of potash, sulphate of ammonia, sulphate of lime, and he will get the best crop from it, for he gives to the soil for the plant, and in a soluble form, phosphoric acid, azote with sulphuric acid, potash and lime. Employing these salts does he give to the soil for the plant these elements only? No. These salts, as they are in trade, contain some impurities which consist of soda, iron, magnesia, chlorine, manganese and silicon, besides oxygen, hydrogen, carbon, and water. He gives them all the elements of the crop; not, however, in the proportion in which they exist in the crop, and not to supply their want in the soil, but purely as inseparable from the only few elements that constitute the true substance of manure.

One might employ the same salts in their purest state, as they are found at the shop of the chemist, and with equal effect, that is, with an effect much better than that of a manure containing all the elements of the crop.

Neither is it the best manure which contains the greatest quantity of fertilizing elements; for there is a limit in their quantity over which it is either dangerous or useless to give them. Give more than five thousand pounds of nitrogen to an acre of wheat, and your crop will be of straw without grain. To prescribe to be applied

as manure all, or the greatest number of the elements of the crop, trusting that, if not absolutely wanting, the others will not be lost, was the old rule in agriculture; and in medicine, in building, and in almost everything, a similar system was adopted, when science had not yet come to define what was really wanting and what was not. The thicker a wall, so much the better for the holding up of a house. To get rid of fevers, one should have swallowed all the ingredients of the caldron of Macbeth, or at least a pound or two of quinia root. To manure well, one should have given to the soil a fertilizer as complicated as possible, trusting that in the bulk there would be what was absolutely wanting, and that the rest of the mass, if not absolutely wanting, would not be lost.

Accordingly manure that is such a complicated mass acquired in agriculture a sway as indisputable as that of a monarch, if not of a divinity. But under the hands of science, king dunghill has been obliged to give up his pretensions. Dung has been, till lately, the type of manure. Of what is it composed? Its mean composition is this:

Dunghill	100	Soda	traces
Water	80.00	Magnesia	0.24
Carbon	6.80	Nitrogen	0.41
Hydrogen	0.82	Phosphoric acid	0.18
Oxygen	5.67	Potash	0.49
Silicon	4.32	Lime	0.56
Chlorine	0.04		
Sulphuric acid	0.13	Total	100.00
Oxyde of iron	0.34		

Now, let any one take two heaps of dung, give one of these to the cultivated soil, from the other extract first what it contains of nitrogen, phosphoric acid, potash and lime, and then give it to the soil, the same as the other. On the other land, let him employ the elements extracted from the dung. There will then be three plots of soil, the one with dung in all its fullness; the second with dung deprived of such four of its elements as we shall call the agents of its fertility; the third with this agent of fertility extracted from the mass. Let him add a fourth plot without any manure. The crop will be, in the third plot, greater than in the first; consequently, one must conclude that the elements or agents of fertility are more active when employed alone, than when employed mingled with the remaining mass of dung. The second and the fourth plots will have an equal crop. It is evident, then, that the four elements which have been subtracted from it, gave to it all its value, for without them it becomes inactive. Then those four elements, nitrogen, phosphoric acid, potash and lime, constitute the true substance of manure, the active part of the dung itself, and can be employed by themselves with better effect than when they are employed mingled with the greatest number or quantity of the elements of the crop. The union of these four elements or agents of fertility, is, then, the undisputable standard for manure, by which to compare and decide the value of every other manure-matter, be it dung, guano or any other.

Any one can make such an experiment as I have suggested, and I feel sure, that if not convinced by my words, he will be by the plants themselves, which by their crop will bear witness to the results of science.

I hope to have another opportunity of giving and explaining the best and the easiest method of analyzing phosphates and super-phosphates of lime, in order to make out their percentage of phosphoric acid, the quantity of it soluble and the quantity insoluble, and that which in superphosphates goes back from a soluble to an insoluble state.

PROF. MUSSA, of Messina, Italy.

Paris, France, February, 1873.

THE DAIRY, FARM-STOCK AND POULTRY.

Sheep-Husbandry in California.

Having noticed with satisfaction for some time the efforts being made by some of your enterprising men to introduce sheep-husbandry in the South, in furtherance of their object I will lay before your readers a statement of facts and figures, which I have gathered in the pursuit of the same business in this State, and at the same time give a short account of the manner in which it is here conducted. In doing this, one of my objects will be to show the immense profit which, with a fair mount of attention, we may safely count upon in its pursuit, and to stimulate some of my Southern friends to an attempt which I feel will surely be rewarded with success.

The nature of the Merino sheep is such that it thrives equally well, if not better, in the hottest and dryest of climates, as in the cold Northern States, and, therefore, will not suffer from a change of climate. They do well in large flocks where the nature of the country will permit them to be herded together, requiring only one man (for a great portion of the year) to give them attention, thus economizing labor. They will do well without winter feeding in some portions of the South, and will require but little in most of the Gulf States. These are among my reasons for believing sheep-husbandry to be peculiarly fitted for the South. I will now state what the profits from the business are here. It would be conducted differently in different sections of the South, but I think always with the same result—a large profit.

In entering the business in this State, we seldom begin with less than 2,000 ewes, for the reason that it requires the same labor to care for a smaller number, viz: one shepherd.

Stock ewes of a fair grade of Merinos are worth generally $3 per head, cost of keeping and profits as follows:

1 shepherd's wages 12 months at $30 per month	$ 360 00
Board of shepherd 12 months at $10 per month	120 00
Two extra shepherds two months, (during lambing season,) at $30 per month, board of same at $10 per month,	100 00
One shepherd for increase, 7 months at $30, with board $10	280 00
Rent of 4,000 acres land at 5c. per acre	200 00

April—Shearing 2,000 ewes at 6c. per head	120 00
Board of shearers, with extra labor required, 4c. per head	80 00
September—Shearing 1,940 ewes (allowing a loss of 3 per cent.) at 7c...	135 80
" " 1,600 lambs at 7c	112 00
Freight commissions, insurance and storage on 14,680 lbs. wool, at 1½ cents per lb	220 20
Total expense keeping one year	$1,728 00

PROFITS.

April—6,000 lbs. wool at 20c	1,200 00
Sept.—3,880 ewes at 15c	582 00
" 4,800 lambs at 15c	720 80
" 1,000 lambs, worth $2 per head	3,200 00
Total profits one year	$5,702 00
Deduct amount of expenses	1,728 00
And we have net profit	$3,974 00

From the above you will see that the average yield of wool of good grade Merinos, is 3 lbs. per head, spring clip, and 2 lbs. per head, fall clip, or 5 lbs. per year.

There is one other expense attendant upon keeping a flock of sheep—wagon and two horses and the necessary corralling. The above statement of profits differs from the actual profit on sheep last year in this, that instead of 20 cents, spring clip sold for from 45 to 55 cents per lb., and fall clip 10 to 21 cents per lb.

Another profit not mentioned above is the manure; two thousand sheep will thoroughly enrich one acre of land every four days. Why, then, are not the large tracts of worn-out lands in the South used for grazing sheep, and at the same time enriched to a high producing standard? From my knowledge of the South I believe it is practicable. Sheep-husbandry here is an occupation of itself, and is seldom connected with farming, and so it could be in many parts of the South. A man with a flock of sheep could graze all the waste land within fifty miles of his place, and afford to pay a rent for it. We think nothing here of driving our sheep one hundred miles for a few months pasture, and it is a known fact that sheep thrive best where their pasture is changed often; but I do not wish by this to convey the idea that sheep-husbandry pays best when not connected with farming, on the contrary I think it should always be.

Our sheep ranches here often contain from twenty to fifty thousand head of sheep, but they are always kept in flocks of about 2,000 each. I shall watch with interest the development of this new industry in the South, and hope much from it.

J. DIXON.

Fresno County, California, February, 1873.

Bees and Practical Bee-Keeping.

Knowledge against "Luck" in Bee-Keeping.

The remark often made, that "I am not lucky with bees," by many of the farmers of the country, shows the necessity of more energetic action on the part of the true lovers of apiculture in disseminating among the reading masses a better understanding of the natural history of the honey bee, and the needed care and attention that will soon convince the farmer of average intelligence of the fallacy of that bug-bear of bee-keeping, "luck."

It could be asserted with as much reason that the man who rears hogs, horses or chickens, can do so without any knowledge of their natural wants, and be governed by a blind confidence in his luck, and the ability of such creatures to care for themselves, as to claim this for the governing rule for the bee-keeper. For he who cares for his bees with a knowledge of their wants, in the same manner he would care for the others, will without doubt reap a reward which will thrice repay him for that care.

A most important part of the needed knowledge in bee-keeping, is that of being thoroughly conversant with the social economy of a colony; the different shape and size of cells; the various kinds of bees reared therein, and modes of rearing; the duties performed by each of the kinds reared, and length of time devoted to such duties; the results arising from any accidental or other interference with the even and continuous performance thereof. This, to those not familiar with bees and their habits, may seem intricate and puzzling, but in simplicity and certainty of results following causes, will compare favorably with, and in many cases excel many of the natural laws governing the domestic animals cared for by man.

There is within a hive three different kinds of cells in which the bees are reared, two of these kinds being of the same shape, but differ in size, and one kind differing in size, shape and length, not only from the other kinds, but from each other, as it is seldom that of the last mentioned two can be found in a hive that are exactly alike. Of the first two the most important and serviceable are those called worker cells, constructed on a scale of five to the inch, in which are reared the worker bees of the colony. The other, and least serviceable kind in the breeding part of the hive, are the drone cells, constructed on a scale of four to the inch, in which are reared the male or drone bees of the colony. The third kind, and in some cases of the greatest importance to the colony, are the queen or royal cells, constructed from the foundation of a worker cell, and in which are reared the young queens, to replace the lost mother of the hive, or furnish to second swarms one who in the new home will assume that position. The shape of the first two are familiar to all who ever saw honey-comb, but the last vary so much from the others that many old-fashioned bee-keepers, on seeing the same for the first time when separated from a sheet of comb, will scarcely believe it to be a cell of the honey bee, and often accuse those exhibiting it as such with playing a practical joke in

showing the shell of a ground nut, and asking their credulity to believe a bee was ever reared therein.

Of the bees reared in the different cells the most important to the welfare and prosperity of the colony is the queen, for without her it can exist but a short time. The next in importance is that of the worker, who performs all the labor of the hive, and the number whereof is the standard whereby to judge the value of the colony. The last, and least serviceable, and in some cases of decided and lasting injury, are the drones, who spend their lives in living on the labor of others, and whose sudden death confers the only act of benefit on the bee-keeper, of which his kind is capable. These different kinds vary in shape, size and temperament, as much as in utility, and are also recognizable even on the wing by the difference of sound made in flying. There is also a difference in the time necessary to produce a perfect bee of the various kinds from the egg, of which more in future numbers of the RURAL CAROLINIAN. PATRON.

The North American Bee-Keeper's Society.

This useful and zealous Association had an interesting and profitable session at Indianapolis, Ind., 6th to the 8th of December, 1872, a report of which has been sent us by the worthy Corresponding Secretary, D. L Adair, of Hawesville, Ky. Many very important questions were discussed by the members, most of whom evidently knew what they were talking about, and spoke to the point. We cannot follow these discussions in detail, but for the benefit of our readers, many of whom ought to be, if they are not, interested in the subject, we will make a few brief extracts, embodying facts and suggestions drawn out by the questions brought before the meeting:

BEES ON EVERY FARM.—Hon. M. L. Dunlap, of Illinois, said that bee-keeping was a delightful and profitable pursuit, as a family recreation and resource; not that thousands of pounds can be raised by every one, but all can have a supply. When we teach all to manage them, and make them interested, we give them something to attract them, something that will keep our boys from the towns and their vices. We find few farms for sale now, because the tastes of the people are becoming elevated, and homes are made more attractive than formerly by the addition of such things as make them pleasant. We have the flowers, but if they are trampled out, they must be raised, protected, and made accessible. It was a success, even in Chicago, the suburbs of which produced abundance of white clover.

Mrs. Tupper, of Iowa, met a farmer and his wife coming out of Des Moines. He had received $12 for four loads of corn, while she had $25, the proceeds of three hives of bees. Women could make it successful, whether men could or not. It will pay in suburban homes, and even on the house-tops of cities.

THE ROCKY MOUNTAIN BEE PLANT.—Mrs. Tupper had had this plant for two years. Sowed half acre. It grew and blossomed finely from May till frost. Came up against spring. She considers it valuable for bees. Its botanical name is *Polanisia Purpurea*. Is an annual, but re-seeds the ground. Is valuable as an ornamental plant. Cultivated it in drills and broadcast with equal success. Borage is a good bee plant, but becomes a bad weed.

CAN BEES BE TAMED? Mr. Homer says that bees can be domesticated. Had bees set by a path that become so accustomed to passers that they never tried to sting. He believed that they could be familiarized and accustomed to being handled, so that they would be perfectly peaceable.

Dr. Hamlin gave experience with bees placed on a path near a gate that was used and slammed repeatedly during the day, and thought they become accustomed to it and did not mind it.

McFetridge, of Ia., had bees in Huber Leaf Hive, which he set in his porch, which soon became so tame that they bothered no one.

Mr Moon said that all bees could be irritated, but deal gently with them and they will deal gently with you.

MINING, MANUFACTURES AND TRANSPORTATION.

Transportation.

There is no subject now engrossing so much of the attention of thinking men in America as does the important question of securing cheaper freight for the productions of the land. The rapid development of the central portion of the United States, commonly called the Mississippi Valley, demands greater facilities and cheaper rates, than it now has, or can have under the present condition of things; and the fifteen millions of energetic people who are so deeply interested in the solution of this question will never rest contented until they have accomplished their object, for in the accomplishment of it depends the future prosperity of this great section. All over the Northwest the people are restive under their present embarrassment and subjection to huge railroad monopolies, and they are combining for the purpose of obtaining relief. Everywhere leading newspapers, and even the best magazines of the country contain articles from leading minds on this subject of vital interest, and the whole people of the great West are demanding with united voice, a more direct, reliable and cheaper highway for its vast commerce.

The last thirty years have been emphatically an age of railroad building, for during that time the people of the United States have built over sixty thousand miles of railroads, and are now building at an average three thousand miles of new road each year.

On the first of January, 1873, there was in the United States 70,178 miles of railroad, and about 40,000 miles more in various stages of incipiency. This great interest has cost over *thirty-four hundred millions* of dollars, and is absorbing capital at the rate of nearly a million of dollars per day, fully as much as the earnings of the vast sum already absorbed; but with it all, the people are dissatisfied, and justly so, as it does not give them what is needed, for nothing so much retards the growth of the mighty West as the want of cheap transportation.

The internal commerce of the United States is *much* larger than that of any other of the great powers—is, in fact, as great as any *five* of them combined. Let us look at only two of our articles of production. The crop of grain in the Mississippi

Valley alone, was last year over one thousand millions of bushels, while the cotton crop of the South has averaged since the war about three and a half millions of bales per annum. How few people ever think of the vastness of our agricultural productions. How few of us know that, since the war ended, the Southern people have raised over twenty-three millions of bales of cotton, and that this single production of our section has brought in the markets of the world, a sum greater than the entire debt of the United States.

Now the all important question is "how shall we get these vast productions to market?" and the answer, we think, is plain. We must depend less on railroads, and develop our water lines of communication by a system of canals of large capacity which shall connect our rivers and lakes, and thus make them available for bringing our productions to market at from one-third to one-sixth the present cost.

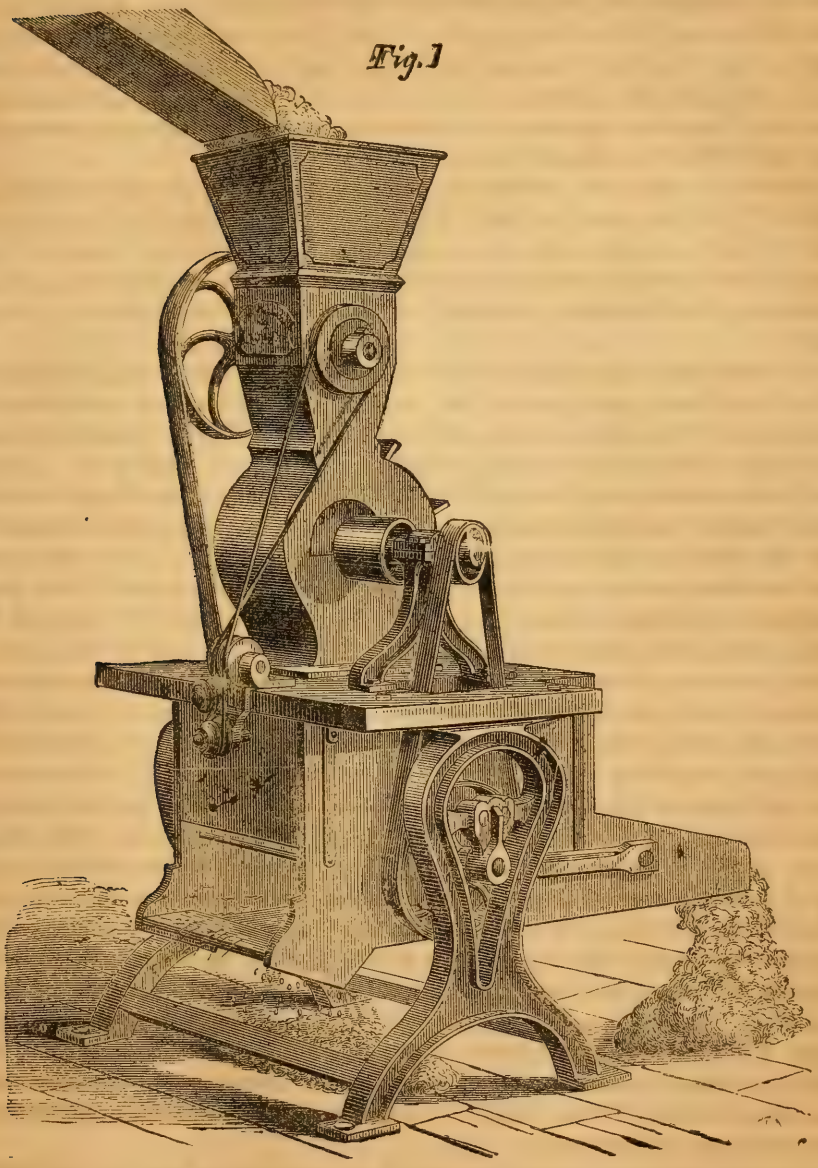
The difficulties under which the country labors are not merely due to the fact that the railroads have passed and are fast passing into the hands of monopolists and speculators, but is inherent in the system, for notwithstanding the dissatisfaction and grumbling which extends over the whole country, it is doubtful if the railroads can conduct transportation at much less rates than are now charged, and the people must look for the remedy elsewhere. With these views we are glad to record the fact that thinking men are acting in this matter all over the country, and we trust that the efforts now making will result in securing the object desired. It is in contemplation to increase to more than double the present capacity of the great Erie canal, to cut a ship canal around Niagara Falls, to cut one through the peninsula which divides the Chesapeake from the Delaware, to complete Washington's favorite scheme of uniting the waters of the James with those of the Kanawha, to cut the Fort St. Philip canal at the mouth of the Mississippi, and to clear out all obstructions in this great artery from the falls of St. Anthony to its mouth, and by the people of the Gulf States to cut a canal across the peninsula of Florida; and last but more important than all these to us in this section, and we believe to the whole country is the project of uniting the waters of the Tennessee with those of the Savannah, by constructing a canal from Guntersville, Ala., on that river to Gadsden, Ala., on the Coosa and thence up the Coosa to a point near Roswell, Ga., and thence by another canal over to the waters of the Savannah, when the way to the sea will be opened, and here we ask leave to call the attention of the friends of the "Atlantic and Great Western Canal" to the fact that, at a point about forty miles from the ocean a canal of less than thirteen miles will bring them into the waters of Port Royal, so named because it is every way the best harbor on the Southern coast, one into which the "Great Eastern" can sail, and whence the combined navies of the world may ride at anchor.

Governor Smith, of Georgia, has called a convention to meet on the 20th of May, at Atlanta, to devise means to accomplish this great scheme, and we trust that the people of South Carolina will be ably represented in that convention, as we are as deeply interested in this matter as our sister States of the South and West, for it means to us as it does to Georgia and Alabama, cheap coal, cheap iron and cheap food.

B. F. E.

Kahnweiler's Cotton Seed Hulling Machine.

Fig. 1



Our illustration represents a machine, which, if it make good the claims of its inventor, will prove a very great boon to the Southern planter. Not having had the pleasure of seeing it in operation, we cannot speak of its practical workings, but it comes so well recommended that we take pleasure in calling attention to it, and asking for it a fair trial. The *Scientific American* says :

It has its origin from a very successful machine adapted for oil mills, and patented by the same inventor in 1869, and which has been used over three years in some of the largest oil works. Mr. Kahnweiler designed, in this machine, to simplify the construction of the original machine, so that it might be managed by almost any laborer, and at the same time greatly lessen the cost. There is a great demand among planters for a machine of this kind, to prepare seed for feeding purposes; also to fit it for sending to distant oil mills, to which it might not pay to ship the unhulled seed. A new improvement also, a screening apparatus, is attached to this machine, forming a complete hulling mill on a small scale. It separates the meats from the hulls effectually with the use of a fan, and is therefore, less complicated, and requires less power to run it. The same separator is adapted to use in all the cotton seed oil mills, as the work is done in a small space, and the separator can be built at much less expense than ordinary revolving screens, while it does more perfect work.

The machine is compact, may be run by one-horse power, and will it is said, hull from fifteen to twenty bushels of cotton seed per hour. The price, we believe, is $175. R. H. Allen & Co., New York, are agents for the patentee.

Natural History Applied to Agriculture.

Specimens of insects, securely packed, (according to instructions given in The Rural Carolinian, for April, 1872,) with letters of inquiry, entomological notes, etc., should be addressed, (post paid,) to Mr. Charles R. Dodge, Washington, D. C.

Answers to Correspondents.

Bugs or Pear Twigs—A. S., Roswell, Georgia.—The insects you send "found infesting pear grafts, and young trees" in your locality, are doubtless specimens of the tarnished plant-bug *Capsus oblineatus*, which are well known in the west to be very destructive not only to pear trees, but quince, apple, plum, cherry and other trees, and many plants such as cabbages, potatoes, turnips, &c. The insect is a true plant-bug belonging to the Heteroptera and is provided with a sucking tube or beak instead of jaws, and this is the little instrument with which he injures the trees. Its puncture is peculiarly poisonous, and when they appear in any great number the tree must suffer, particularly if it is a young one. It belongs to the same family as the chinch-bug, which is so destructive to grain crops in the northwest.

The insect is about a quarter of an inch in length, color yellowish, one of its distinctive characters being the V or Y shaped yellow mark on the scuttellum or triangular piece just back of the thorax and between the base of the wings. The young insects are green and resemble the older ones in shape and markings, with the exception of being wingless.

The next point, the remedy, is a harder nut to crack than giving the creature's natural history, especially as it feeds upon such a variety of plants and is provided

with such good wings. Mr. Riley suggests in his second report that as the bugs are extremely fond of congregating upon the flowers of the cabbage, that in Southern latitudes a number of cabbage plants (as they bloom quite early in the season) be permitted to go to seed in some remote corner of the field, in order that the insects may be attracted to them, and away from the trees, and where they may easily be found and destroyed, gathering them from the flowers with a sweep net, or shaking or jarring them off into some receptacle of hot water.

The other insect, although much injured, appears from the wings to belong to the *Neuroptera* (dragon-flies, lace-wings, &c.,) and is therefore a friend and not a foe.

The Carpenter Bee.—We have recently received a specimen of wood bored by this bee, we suppose from a Rural correspondent, though no letter accompanied it. The specimen looks as though cut from a post, and had several smooth deep holes in it, as round as if made by an augur, but perfectly smooth and uniform throughout, the bottom rounded.

The name of the architect of this neat little "insect home" is *Xylocopa virginica*, though, doubtless, our correspondent thought it nothing but a "bumble-bee."

The insect after selecting a place for her burrow, or tunnel, which may be an old fence post, a vine trellis, or any similar locality, commences to gnaw her way in, proceeding at the rate of a quarter to half an inch in a day. After taking about the length of her body she turns, and then her course is with the grain of the wood, which must enable her to work faster than at first. As she proceeds she throws the chips out behind her by means of her powerful legs, expelling them entirely from the gallery where she is working.

We have seen these tunnels a foot in length, generally in pine or cedar, and we have read of their having been constructed fully eighteen inches in length. Frequently more than one tunnel can be traced to the same opening, and sometimes they run one above another. A writer in the *American Naturalist* thinks they make new tunnels when old ones are not to be found, and that the same tunnels are used for a number of years.

After finishing the work the space is divided up into little apartments or cells, between a half and three-quarters of an inch, the partitions being constructed from the coarse raspings made by the bees in forming the tunnel, and a sticky substance to make it solid. The bottom of each cell, like the bottom of the burrow, is concave, while the top, or under side of the partition, is flat. The mother bee forms these cells for her future offspring, storing them with masses of pollen, in order that the grub hatching from the egg which she deposits before closing up each apartment, may have plenty of food near at hand.

Birds vs. Insects.—The thrush works from half-past two in the morning until half-past nine in the evening, or nineteen hours. During this time he feeds his young two hundred and six times. Black-birds work seventeen hours; the male feeds the young forty-four times, and the female fifty-five times. The industrious titmouse spreads before its voracious offspring four hundred and seventeen meals a day, the bill of fare consisting chiefly of caterpillars.

Agricultural and Mechanical Fairs.

"Little John," in your February number, "comes down pretty hard" on the management of the Agricultural and Mechanical Fair of South Carolina; but there is probably a strong necessity for a change in conducting Agricultural Fairs, and his stringent article, should be taken in the spirit of one desirous of correcting an evil, rather than one seeking to stir up strife or wound feelings.

There is no doubt about the fact that Agricultural and Mechanical Fairs are powerful agents for the advancement of those great twin arts, manufacturing and agriculture, and it is equally clear, that a proper management of the fairs, is essential to this end. But the "proper management," is not a thing that comes by instinct, and for the South at least, there may be difficulties, besides knowing how, and knowing how is certainly difficult enough.

The world was not made in a day, and such an intricate and important institution as an Agricultural and Mechanical Fair will take time and much thought to perfect; and it is right to point out evils and suggest improvements, but this should not be done in a spirit of fault finding, nor should such criticisms and suggestions be responded to pettishly.

Now, Mr. Editor, after this preamble, allow me to offer, for what they are worth, through your valuable journal, a few suggestions to the managers of Agricultural and Mechanical Fairs in the South:

1. Let the advancement of agriculture and manufacturing be the chief and constant care.

2. Stimulate the spirit of making two blades of grass grow, where one blade would scarcely live before.

3. Call forth the inventive talent of the South by honoring and rewarding it.

4. Let the skilled workman see that his diligence and perseverance will not go unrewarded.

6. Make the enterprising capitalist feel that his efforts for the establishment of useful industries will be sympathized with and sustained.

7. Offer some of your most important premiums for the following:

(1.) The greatest average yield, in value, per acre, for the whole farm; the products to be any, or all, of a mixed husbandry; for instance, silk, cotton or coarser fibres, grain, stock, fruits, &c. The idea is to stimulate the farmer to work for *his* best interest, thereby promoting the general welfare.

(2.) The greatest improvement in sterile soils. The average of the two preceding crops to be taken as the condition of sterility, and the increase of the crop of the succeeding year to be the test of the improvement.

(3.) The fertilizer that yields the highest per cent. of the cost.

(4.) The best invention in implements and machines.

(6.) The largest manufacturing business established that year in the State.

(7. The manufactory which has produced the largest quantity of goods that year in the State.

(8.) The establishment which has produced the greatest variety of manufactured goods in the State.

8. And for the further advancement in labor-saving and efficient implements and machines, let as large prizes as the Society can afford, be offered for such inventions. For instance, an economical and rapid cotton-picker is something much needed; let there be a large prize offered for its invention, and thereby indicate to the inventor what is needed, as well as stimulate him to its production.

9. Amusements. Let there be amusements too. Man was made to laugh. Nay, it is necessary that man should laugh, if the world is to be at peace and prosperous. But the laugh should never be pushed to the weeping point. There are some things in this world that will tickle a fellow till he cries. I would vote against that sort of fun every time.

MAX REMARX.

March 15th, 1873.

To the Masters and Secretaries of Granges.

We are anxious to publish, for the convenience of the Order, and the information of the public, a full and correct list of the Subordinate Granges in South Carolina. Will the Worthy Master of each Grange, whether old or new, give us, (or instruct the Secretary to do so,) the name and number of his Grange, the names of the Master and Secretary, and the Post-office of each, and the County in which the Grange is situated.

With thanks to the Worthy Brothers who have reported as requested, we desire to call the renewed attention of those who have neglected it, to the foregoing notice. Every one will see the importance of a correct published list.

We regret to be obliged to say, that up to this time, after the above notice has been before our readers two months, we have received returns from less than half the number of Granges in the State.

New Granges in South Carolina.

Odell Grange, Laurens County, R. P. Briggs, W. M.; J. W. Hill, Secretary; Post-office, Whitmore's, Newberry County.

Tylerville Grange, Laurens County, S. G. Craig, W. M.; J. R. Pitts, Secretary; Post-office, Tylerville, Laurens County.

Smoke's Cross, Roads, Grange Colleton County, Jasper M. Smith, W. M.; E. F. Warren, Secretary; Post-office, Branchville, S. C.

Providence Grange, Orangeburg County, D. K. Morris, W. M.; F. W. Dantzler, Secretary, Post-office, Dantzler's Ferry; W. M.'s Post-office, Holly Hill.

Miscellaneous Correspondence and Notices.

"Grapes and Grape Culture" Again.

Editor of the Rural Carolinian: In your issue for April, 1873, I see Mr. F. R. Elliott has taken me to task, and rather unfairly criticises my article under the above caption, which appeared in a former issue of the Rural Carolinian. He says he does not believe that one season in the employ of a good vinter is better than a score of volumes on grapes, that it would not develop more practical facts.

Before I started into the business of growing fruits of different kinds for market, several years ago, I had read enough matter, some of it Mr. Elliott's, to fill a score of volumes; how large the volumes would be I am not prepared to say, nor did I say in my grape article, yet I found that I had very much to learn before I made a paying business of it, when I had once fairly started. I had known a little about growing fruit on a small scale, but when I came to growing for market, I had to adopt different plans to insure success. *I grow fruit, especially grapes, for market, and largely, too, and rely almost altogether on the proceeds, not relying on an outside income for support;* so, when Mr. Elliott says I have merely a "surface knowledge," he is doing himself as well as me injustice. I have eight acres or more now in grapes, and intend planting several thousand vines this fall. I also have other fruits in large numbers. To show that I am *practical*, not merely a *surface* fruit grower, I obtained as large, if not the largest, prices for my pears as any sent to the Philadelphia market, and for grapes correspondingly.

It would give me pleasure to comment somewhat upon the last line of Mr. Elliott's communication, but I must devote the time required for penning articles to the fruits themselves, to obtain the practical knowledge which he says I am so deficient in, in contrast with his.

As there seems to be no doubt but that Mr. Elliott's object in writing that article in your April number was to open the way for him to write a series on the grape, I, and no doubt the public generally, will anxiously await the publication of the initial number.

With all deference to Mr. Elliott's knowledge of "the principles of association connected with climatic life," I remain, humbly, DAVID Z. EVANS, Jr.

How to Kill Tent Caterpillars.

Editor of the Rural Carolinian—Seeing a great many webs on my plum, peach and apple trees, I examined and found them filled with large brown caterpillars. As they were injuring the trees by eating the foliage, I resolved in my mind some way of speedily ridding my trees of these pests. I poured kerosene oil from a bottle into the top of the webs, and it trickled on them, and a mere touch was sufficient to insure death. In fact, the next day, they were lying in heaps at the root of the tree.

As this was so successful, and that "common little nuisance," the black ant, was feeding on my tender melon plants, I tried it on them. I applied it by means of a feather, dipped in kerosene oil, gently sprinkling the leaves of the plants. The consequence was, the ants struck their tents, and silently stole away to other fields, where kerosene was not so plentiful. I believe it is the very thing to kill the cabbage worm. I intend to try it on peach and apple trees for the borers.

Medina, Miss. NATIE SEMMES.

Seed and Plant Exchange.

EDITOR OF THE RURAL CAROLINIAN—Your letter is received, and I am glad to be able to send you a few, in fact all I have, of the Indian Pumpkin Seed. I must confess, that I am somewhat disappointed with this pumpkin, and do not find it at all as described by my South Florida friend. Still, it may be due to my mode of cultivation, or to our poor soil.

I should be glad to exchange with you, or any of the readers of the RURAL CAROLINIAN, seeds of the Doura Corn, Egyptian Millet, Cassava Plant, Ginger, Japan Pea, Pigeon Pea, young orange trees, and guava plants, for plants of any variety of Strawberry, Raspberry, Jujube, Black Fig, Running Mango, and above all, I should be greatly obliged for a cutting or two of your *Smyrna Fig*, when you have any to spare.

I also send a few seeds that I received from Brazil, but without a name. I have tried them, but could not make them grow. H. S. KEDNEY.

Lake Maitland, Orange Co., Fla.

Inquiries and Answers.

Mrs. E. C. B. writes: In your November number, I saw an inquiry with regard to a remedy for red ants. I have seen none of the later numbers except the February one, so do not know what communications you have received, but during a twenty years experience have found a strong solution of corrosive sublimate in boiling water, the only effectual one. Strips of cloth thoroughly wet with this, and then bound around the legs of safes, tables, etc., which are removed from contact with the walls, will effectually bar their progress for three months or more. Shelves may be washed with the same, and they will not venture on them for some time, but as wood absorbs less than cloth, this would need repeating oftener. Of course, no article of food should be allowed to come in direct contact with shelves thus prepared.

———A. E. W., Cedar Shoals, Chester County, S. C.: Your Nos. 1 and 2 are *Lichen's* (*not mosses.*) No. 1, with the branched scarlet tips, is *cladonia cristatella*, growing generally on the ground, about stumps and old rotten wood. No. 2, *Usnea barbata*, grows on old trees, of a dull greenish olive color. No. 3, is insect gall on leaf. Some of these galls are very pretty and curious. The insect punctures the leaf and deposits the egg. These curious and monstrous forms of vegetation grow up and inclose the eggs until they are hatched. On some of the *vacciniums* and *archmidas* they form large colored sacs from one to ten inches in length.

———R. S. P.: We are sorry to say that we know no effectual remedy for the squash vine borer. If taken in season, a vine may sometimes be saved by carefully cutting out the worms with a sharp pointed pen-knife. Dr. Walsh says that the best remedy is to cover the vines with earth for a distance of a foot or two from the hill. As the moth, the mother of the borer, does not care to lay the eggs any considerable distance from the roots, she will leave such covered vines in search for those that suit her better. This is easily tried, but in our experience has proved of little use.

———H. W. R.: The Yokohama has done better with us than any other winter squash, except the Canada Crook-neck, which is very small. The squash vine borer usually destroys all the finer varieties here. The Cashaw pumpkin (or squash,) is a tolerable substitute, and can be relied on for a crop, in spite of the borer, and the late grown specimens will keep till spring.

———Nettie.: You may use either carbonate or sulphate of ammonia as a liquid manure for your plants. One ounce to a gallon of water will give sufficient strength.

———"Colleton.:" The plant, flower and leaf of which you send, is the Atamasco lily, (*Amaryllis Atamasco,*) very common in many localities in the South.

General Notices and Acknowledgments.

The next, being the second meeting of the National Agricultural Congress, will be held at Indianapolis, Ind., commencing on Wednesday, May 24th, 1873. The necessary local arrangements for the occasion, it is now understood, will be ample and complete. By the Constitution of this body, each State and Territory is entitled to two representatives for every State organization engaged in fostering agricultural pursuits. The United States Department of Agriculture, Agricultural Schools and Colleges, with an endowment of not less than $20,000, and Agricultural and Horticultural Societies of not less than fifty members, contributing to the support of this Congress, are entitled to one representative each. The constituent bodies which have appointed, or may hereafter appoint, representatives, will please notify the Secretary, Chas. W. Greene, Jackson, Tennessee, who will in due time advise them of the subjects to be presented for consideration at the meeting.

Mr. Joseph Borra, an Italian gentleman, now in this country, writes us that he desires to secure large tracts of land in the South, for the purpose of establishing colonies of Southern Europeans, (Italian and French,) to engage in agriculture and other industrial pursuits. Among the rest, he wishes an Island or a point on the coast mainland, suitable for a landing and permanent station for immigrants. A company of European capitalists, he informs us, is to be organized, to carry his plans into effect. If Mr. Borra can satisfy our people that he is acting in good faith, and is willing and able to do what he proposes, we have no hesitation in saying that our land-owners will gladly co-operate with him in any practicable way.

As we go to press, (April 28th,) the grand "Gala Week" of the season commences in Charleston, and will close May 3d. The meetings of the Agricultural Societies of the State, the Floral Fair, Excursions around the harbor and to the phosphate works, &c., make up a combination of attractions which should bring thousands of our country friends to town. We can promise them a rare treat.

Literature, Science and Home Interests.

INNOCENCE.

She rose from her untroubled sleep
And put away her soft brown hair,
And, in a tone as low and deep
As love's first whisper, breathed a prayer;
Her snow-white hands together pressed,
Her blue eyes sheltered in the lid,
The folded linen on her breast
Just swelling with the charms it hid:
And from her long and flowing dress
Escaped a bare and slender foot,
Whose shape upon the earth did press
Like a new snow-flake, white and mute;
And there, from slumber pure and sweet,
Like a young spirit fresh from heaven,
She bowed her slight and graceful form,
And humbly prayed to be forgiven.

O God, if souls unsoiled as these
Need daily mercy from thy throne—
If she, upon her bended knees—
Our loveliest and our purest one—
She, with her face so clear and bright,
We deem her some stray child of light—
If she, with those soft eyes in tears,
Day after day in her first years,
Must kneel and pray for grace from Thee—
What far, far deeper need have we!
How hardly, if she win not heaven,
Will our wild errors be forgiven!

N. P. Willis.

THE UNIVERSITY OF THE SOUTH—MR. VANDERBILT.

Within a few minutes of each other two passenger railway trains leave Chattanooga, Tennessee, daily about six o'clock in the morning, each going West. They run upon the same road bed for thirty-nine miles, as far as Stevenson. At this point the Memphis and Charleston, and the Nashville Roads diverge. Travelling over the latter for twenty-three miles farther, we reach the Tunnel, two miles beyond which is the sombre-looking station of Cowan, at which point the train arrives at 9.30 A. M.

At 1.30 P. M., a coal train with a small passenger coach attached, *backs* down from Cowan to the mouth of the Tunnel, switches off on a Railroad Y to another track that crosses the Nashville Road, going North at an astonishingly steep grade. Up this hill, (for hill it is,) the puffing, blowing, struggling engine travels at fair speed, often ascending at the rate of two hundred feet to the mile, and after having gone seven miles in a serpentine course around and up the mountain, arrives at Sewanee Station. Twelve miles beyond is Tracy, the terminus of the road.

Half mile up the hill westward from the Sewanee Station, passing through quite a village of stores and private dwellings the traveller reaches the site of the University of the South, on a spur of the Cumberland Mountains, a plateau one thousand feet above the surrounding country, and over two thousand above the sea, whose climate is all that can be desired; sufficiently cool and pleasant in summer to prevent lassitude, and dry and bracing enough in winter to make health buoyant.

The present is an age of co-operation, and the University of the South is the result of co-operative influences originating with General Polk, Bishop of Louisiana, who conceived the idea of building up such a University through the combined efforts of the various Southern Dioceses.

On the 4th July, 1857, a convention of all the Southern Bishops and two lay delegates from each Southern State met on Lookout Mountain, in East Tennessee, and took the initial steps towards locating and establishing this University. After a time the heights above Sewanee were selected, a charter was obtained from the Tennessee Legislature, and a domain of ten thousand acres of land and endowment of half a million dollars was secured by the active efforts of the few and from the liberal contributions of the many.

The University was scarcely located before the war broke out, and consequently, like every other Southern interest, was soon brought to the verge of ruin. Hope founded on Faith, however, buoyed the surviving projectors, and after strenuous efforts to reinaugurate the institution, the Junior Department was again opened in September, 1868, upon the site where vandalism had strewn the ashes of the original improvements. Nine pupils were the sum total of the applicants. Money,

however, had been collected, chiefly from England; a chapel was erected, school-rooms were being built; private cottages were scattered here and there over the plateau; the railroad depot was rebuilt, stores were opened, and general thrift became visible all around. In 1869, one hundred students were added to the University roll; in 1870 two hundred, and in 1872 there were two hundred and thirty in attendance.

The resident population increased apace with the number of students, and such a population as perhaps can nowhere else be found on this continent. Only those settled at Sewanee whose souls were wrapt up in this University enterprise. Women, Southern women, who by the circumstance of war have been reduced from affluence to toil, and widows whose only mainstay will be the darling boy they are striving to educate, have assembled there and given the Society of Sewanee a caste, a refinement, a purity surpassed nowhere. The students board with these women, and at the table, in the parlor, in sickness or health, by their daily associations are taught practically the refining, softening, exemplary influence of their maternal hostesses.

Within the past three years two hundred thousand dollars have been invested in buildings, and new private residences are being constantly erected. The University owns the land, is entitled to municipal authority, and the locality is exempt from taxation. Lots of three or four acres area are leased as building lots for thirty-three years, subject to a renewal of lease for thirty-three more. By these means evil influences will be for many years far removed from the students.

The curriculum of the University is admirable, and though not complete is as comprehensive perhaps as the resources at present will allow. No student except from "unusual proficiency" is allowed to matriculate under sixteen years of age, and must graduate upon at least three "schools," or pursue three departments of study, to be selected by the Vice-Chancellor.

The lowest is the Grammar School for the most youthful, in which are taught mathematics, sacred studies and all other English branches that will prepare the youth for the higher schools of which there are nine. There is a school of Latin, one of Greek, one of Metaphysics and English Literature, from English Grammar to Locke's Essays, one of Modern Languages, French, Spanish and German, one of Moral Science and Evidences of Christianity, one of Commerce and Trade, from Penmanship to Mercantile Law, one of Theoretical and Experimental Chemistry, one of Mathematics, from Algebra to the History and Philosophy of Mathematics, and one of Civil Engineering and Physics. The scope of these departments is very comprehensive, and from the ability of the Supervising Board of Trustees, (all the Southern Bishops with one Clerical and two Lay delegates from each Diocese,) there can be no question as to the proficiency of those who fill the various chairs.

The chief executive and adminstrative officer of the University is the Vice-Chancellor, who fills the chair of the last named school, in which are taught location and construction of roads, railways and canals, masonry, framing bridges, instruction in and investigation of mechanics, electricity, astronomy, &c.

Those who remember how faultless was the Ordnance Department of the Confederate Government—that, however scant became the rations of food and clothing, there never was a scarcity of ball and powder—need only be told that the same efficient officer and accomplished scholar who was chief of our Ordnance Department, is now the Vice-Chancellor of the University of the South. His presence is an assurance that the discipline of the University and the training of the students will be all that the most doting parent could desire.

The curriculium is indeed comprehensive, but is it not deficient? Have not the guardians of this Institution ignored a department far more valuable to the rising generation than some of those adopted? The South is emphatically an Agricultural Country. By the misfortunes of war, we have been reduced to poverty, and the first, second, yea many steps towards recuperating our fortunes must be through the channels of agriculture. The majority of the students who will enter life from that *Alma Mater* will resort to agricul-

ture for a livelihood. That vocation is a science; a science as progressive as the age in which we live. Was it not incumbent then upon the Trustees to establish a school of Agriculture, that our youths might there be taught how plants feed, how plants grow, and whether it is from the air or the soil the greater portion of their food is to be gathered? Where could the practical application of science to art be better taught than upon that magnificent domain? A farm of a few hundred acres, that beautiful plateau could not only be used to elucidate the principles taught in the lecture room, but by affording the students an opportunity of applying scientific theory to actual practice, could be made self-sustaining, and others create an endowment for that special school. The veriest details of farm life could there be successfully studied as well as practised—improved implements and their application to various crops—different breeds of stock, and their peculiar characteristics—mixed husbandry and its advantages or disadvantages—relative value of manures—analysis of soils, and hundreds of other practical ideas, that are now novel to the most finished scholar that graduates at our colleges. In behalf of Agriculture, I appeal to the Trustees. Reflect upon this idea, and if practicable, develop it.

It is almost useless to say, that the Sewanee University is a Sectarian School, being entirely in the care and under the charge of the Episcopal Denomination. In this co-operative age, this is, perhaps, the only method by which such institutions can be sustained, and why should we not have religious combination to effect even secular results?

An effort is now being made by the Methodists of the South to effect the same great and glorious end of establishing a University, where the youths of our impoverished South may be educated thoroughly and cheaply. To this enterprise, Mr. Vanderbilt, of New York, has recently made the splendid donation of half a million of dollars, ($500,000.) To the charity of his wife this beneficence is doubtless due, and for it both he and she deserve the prayers and thanks of every Southerner of whatever creed or denomination. I beg the founders and supervisors of that institution to remember, that practically and peculiarly the primeral curse is upon us—"In the sweat of thy face shalt thou eat bread." Teach our youths that science as well as religion and literature, should be carried with them to their daily task, and thus labor will be made honorable, and with that noble corps of laborers, which the rising generation will put into the harvest the down-trodden South, will ere long regain her wonted prosperity.

D. Wyatt Aiken.

TWO PICTURES.

An old farm-house with meadows wide,
And sweet with clover on each side;
A bright-eyed boy who looks from out
The door with woodbine wreathed about,
And wishes, his one thought all day:
"Oh! if I could but fly away
From this dull spot the world to see,
How happy, happy, happy,
How happy I should be!"

Amid the city's constant din,
A man who round the world has been,
Who 'mid the tumult and the throng,
Is thinking, thinking all day long:
"Oh! could I only tread once more
The field-path to the farm-house door,
The old, green meadow could I see,
How happy, happy, happy,
How happy I should be."

THE DUCHESNE ESTATE.

We have before us one of the large, smooth, prairie-like landscapes of the Opelousas country in Western Louisiana. As we are in the times before the war, in the times when this prairie had been tamed by the hand of agriculture, and not driven wild again by the hand of war, the view is one of canefields and cornfields and fruit orchards, of abundant and monotonous fertility, of verdure beyond verdure.

Miles away from the spires of a considerable village, and yet, so even is that oceanic land, within sight of them, stands a plantation mansion a building which seems of Europe rather than of America, so plain and large and solid is it, a mass of stone clothed in mortar. Under the heavily-arched piazza which covers the front of this mansion, sits a lady alone, her eyes fixed on another plantation residence similar to this except that it is larger. The lady is Miss Ninette Rambeau, and she is looking at the Duchesne place.

Of a sudden—"Hullo! Wah, wah, wah! He, Miss Ninette! Jumboloro tell you fust. He come, Miss Ninette; Mas'r Henry Vincent come. Wah, wah, wah!"

Across the yard which separates the house from the road rampaged one of the antiques

and curiosities of the African race, a negro who had not yet ceased to be fractionally monkey, a little less than primitive, man a tamed monster. Hat off, tufts of white wool jigging about his black scalp, legs and arms of different lengths flying in all directions, a huge cane or stick joining erratically in the movement, a whirlwind of tattered clothing circling and shaking around him, his appearance and locomotion were alike amazing. He was lame; one leg was much longer than the other; he used the short leg as a pivot and a means of propulsion; he swung around on it, and tumbled ahead of it. His cane was incessantly busy; he seemed to walk on it and to fly with it; it was a crutch, and it was a wing; moreover it made gestures. As he scratched and tumbled and punched along, his twisted mouth gave forth a congregation of shouts, a clamor as of various voices. He laughed and talked at once; when he laughed he squeaked; when he talked he bellowed. It was squeak and bellow, bellow and squeak, all across the yard.

"Hi! H-o-o-o! He done come. Jumboloro tell you fust. Wah, wah, wah! Mas'r Henry Vincent. He done come, Miss Ninette. He over to Duchesne House. H-o-o-o!"

The young lady had sprung to her feet, her face a rose and her high eyes diamonds. "Has he really come?" she asked, leaning over the railing of the piazza and gazing eagerly at the ancient nondescript. "Did you see him?"

"No. Didn't see um. Aunt Chloe say he come. Wah, wah, wah. Tell Jumboloro so. H-o-o-o! Jumboloro hop into wagon; git right along to tell Miss Ninette; wah, wah, wah! Guess you glad. Guess Missus Rambeau glad. Guess everybody on the ole place glad. Wah, wah, wah! H-o-o-o!"

Having squeaked and bellowed himself the merest trifle blacker—no, lighter—in the face than usual, this venerable man-monkey collapsed upon the ground and wrestled for breath, meanwhile grinning with a forty skeleton power.

"Oh, I am so glad!" exclaimed Ninette Rambeau. "Thank you, Jumboloro. Now, here," taking out her portmonnaie, "here is your five dollar piece. I didn't think it would be you who would get it. Don't spend it all in rum and make a brute of yourself."

"No; no," squeaked the primitive man, rising to his feet with as much labor as if he were climbing a tree, and commencing a dance which seemed like the orgie of a scarecrow. If a loom, a washing machine and a possessed planchette had been working all together inside his raiment, they could not have flung about its tags and bobtails of cotton sacking with greater extravagance. It might have been the pre-adamite dance, the hornpipe of the lake-dwellers of Switzerland, with a reminiscence of gorilla caperings.

"Jus' buy one leetle drop," he bellowed. "One drop to drink your health—drink health of Missus Rambeau—drink health of Mas'r Vincent—drink health of wedding—"

And so he went on, imagining toasts enough to lay forty men-monkeys under their tables, if so be they should possess such furniture.

Ninette rushed into the house, sent one African after her horse, another after her riding-whip, another after her bootees, another to see what had become of the first, until it seemed as if a whole Gold Coast were in commission. "Tell mamma, as soon as she comes in," she said, mounting her saddle, "tell her Mr. Vincent has come, and I will bring him to dinner." She was glowing with excitement and joy; you might easily admit her mother's claim that she was the handsomest girl in the parish; one seldom sees a more dazzling brunette than she was at the moment. In less than ten minutes she had cantered two miles, and was prancing up the great yard of the Duchesne mansion. The house was a huge pile of brick, daubed with coarse, yellowish, weather-stained plaster, which made no pretence of being granite or marble. The facade was a two-storied veranda, the lower story supported by heavy arches, the upper one by pillars of masonry. In the rear was a double row of negro houses facing each other, some thirty in number, solid and comfortable dwellings, also of brick and plaster. The grounds were grassless, of course; but there was a paradise of orange trees, of rare shrubs and of flowers; the senses were mastered by rich tints and strong perfumes. Around, over thousands of acres, stretched the high, grey cypress fences and the well-tilled fields of the Duchesne estate.

Notwithstanding coarse material and a prison-like plainness of architecture, the house showed signs of a barbaric sumptuousness. The door-knob and bell-handle were of solid silver; the name Duchesne was let into the marble door-step in large silver letters; through the open windows were visible pictures and ponderous mahogany furniture. Clearly enough, this had been the residence of a man who did not quite know what to do with all his money. A woman would have handled treasures to better advantage in the way of decoration.

As Ninette pulled up at the front door, a negro in soiled livery appeared and took her bridle.

"Ah, Tom!" she said, gaily, as she dismounted, "I have come to call on the new master. Do you think he will see me?"

Tom, it appeared, was a stutterer; he evidently had something to say, but he could not begin on it; and before he had cracked the first syllable between his laboring jaws, Ninette was in the house. Gathering her riding dress out of the way of her eager little bootees, she whisked through a broad hall and rustled into a monstrous parlor.

There—*embarras de richesse*—were two men, and neither of them the man she sought! The sparkle of her eye went out like a falling star, and her mouth made a little pouting, pitiful grimace, such as one might expect from a disappointed rose.

The two men sat at a table, on which were two bottles of the Duchesne Madeira, a platter of cold fowl, and a bowl of salad. One of them, the one who had the most confidence and ownership in his port, the one who, at first sight, could be distinguished as the autocrat of the festivity, was a short, paunchy, light-haired, blue-eyed young fellow, well dressed, in regard to material, but with a slatternly, untied, unbuttoned air, as though his clothes were intoxicated. His round and shiny face, quick-glancing eyes, and quirking mouth expressed a combination of smartness, slyness, impudence, and vice, slightly relieved by glimpses of jollity and coarse goodfellowship.

He carried his bullet head over his right shoulder, and his shining beaver on his left temple. One eye was closely shut, and the other ostentatiously wide open. The bridge of his nose was barked or blazed, as though some hewer of human countenances had lately been that way, and had marked out his road for a return. His lip, too, was clumsily cut, after the manner of knuckles in cutting; and his whole countenance had a swollen look, which made the humane soul desire to bandage it. In fine, he had the air of a New York rough, or a Baltimore plug lately out of a fight.

His companion was, apparently, of the cross-roads' grocery type; middle-aged, with long, unkempt, greasy hair, and whitish eyes; a face so cadaverously pale and unwholesomely flabby that it would have deterred a Maori from eating him; the sloppiest and seediest of black clothing, and a meeching, unsteady demeanor. A man who frequently saw his betters; a man much bullied by his own consciousness; a man who "had no use" for a sheriff; a shamefaced, played-out "dead beat."

As Ninette faced them, both rose to their feet, the younger with an expression of impudent courtesy, the elder with sheepish respect. She was so far from being pleased with their appearance, that her first impulse was to turn her back on them without a word and go on searching for the one person whom she wanted. Nevertheless, they were men; and, in those days, all white people owed civility to all other white people; for they were not all alike members of the great, natural, Caucasian aristocracy? So Ninette made a slight bow, and said, "I expected to see Mr. Henry Vincent."

"Have a seat, ma'am," responded the bullet-headed youth, firing a shot of admiration at her with his open eye. "Very happy to see you here. Let me offer you a glass of madeira—some of the old Duchesne tap—first-rate article, ma'am."

As he turned to fill a glass, he gave his blubbering comrade the wink of a Five Points Lothario.

"Is Mr. Henry Vincent here?" demanded Ninette, without stirring from her position.

"Can't say he is just at present," admitted the plug, slightly quelled by her dignified tone.

"When is he coming?"

"Don't know nary such person."

"Is it possible?" exclaimed Ninette, frankly stating her astonishment. "I heard that the heir of this estate had arrived."

"All right. Here he is—quite at your service," grinned the fellow, tapping his waistcoat respectfully, as though it now belonged to his betters.

"You the heir!"

Ninette flushed with downright anger; what did the impudent creature mean?

"I *am*. So they *say*. That's the *will*." These short sentences were uttered at intervals, with an accent which was meant to be impressive, and which might have been considered impressive at Jones' Wood.

"Who did you say you thought was the heir?" he suddenly added, with an expression of hard-drinking slyness.

"Mr. Henry Vincent, a friend of Mr. Duchesne's. It was so understood here."

The plug turned to his comrade; he opened his right eye and shut the left; then he opened his left eye and shut the right. To this speechless succession of queries the blubber-faced man responded by an imbecile stare, unilluminated by a wink or a grimace.

"This is very singular," stammered Ninette, preparing to go. "I don't comprehend it"

"Can't say but what I'm slightly mixed myself," broke in the youngster, evidently anxious to detain her. "I knew Duchesne; I may say I done lots of business with him at my place in Carrollton; he used to booze there. I kep' a licker store—very best brands and taps, you bet; and Duchesne knew what to call for. But as to making me his heir, that beats me. I own beat on it. However, he done it. I've seen the will, and that's the way it spells. 'All my estate to Edward Roland, of Carrollton,' or words to that effect. Now, I'm Edward Roland, of Carrollton. I'm Edward Roland, and this is my friend and faithful bar-keeper, Jake Philpot. Jake, make the lady a bow."

Ninette began to fear lest the man spoke the truth about the will. Her color, which a moment ago had been crimson, now sank to a lily-like pallor. She was tremulous from head to foot, and could scarcely conceal her emotion.

"Good morning, sir," she said. "Excuse my intrusion. I had expected to meet an old friend.

"*Young* man, this Mr. Vincent?" inquired Edward Roland, with a gleam of fresh interest. With one watery eye settled on her face, and the other quizzically closed, he looked outrageously impudent.

Ninette glanced at him angrily. He seemed to be peering into her feelings toward Henry Vincent; his squint had the insolence of a leer. Suppressing a desire to strike him across the face with her riding whip, she marched superbly out of the room.

"I say, what name?" called Roland, stumbling after her.

His companion caught him by the coat skirt, muttering, "God's sake, let her 'lone. She's one of the high-toned sort. Git yerself into a big fight."

"All right," answered Roland. "Let's have lunch. Here's to her health. Devilish splendid gal. I'll bring her round yet. Women ain't a goin' to sour on a young fellow, peart and healthy, and pooty good lookin', who owns the Duchesne estate."

Having winked at Philpot, right eye and left eye alternately, twelve or fourteen times, he opened his sore mouth with a grimace for a piece of cold fowl.

Meantime, Ninette rode homeward as fast as she came. At the gate, she met Jumboloro, his tufts of white wool jigging and hornpiping with delight, his "human evasions" of limbs performing unearthly capers, his flags and streamers of raiment waving in a fashion to scare all the crows in North America.

"H-o-o-o!" he bellowed, and then squeaked, "Wah, wah, wah. You see him? Aha! What Jumboloro tell you? Jumboloro tell you fust. Mas'r Henry Vincent. Pretty soon Missus Henry Vincent. Wah, wah, wah."

"Jumboloro, what did you deceive me so for?" answered Ninette, with irritation. "Mr. Vincent is not there."

"Wah, wah, wah," squealed the man-monkey, tears of laughter rolling down his leathery cheeks, folded like the skin of a rhinoceros. "Oh yes, he be. You seen him. Now you want to plague Jumboloro. Aunt Chloe tell me the young man come what own the 'state. Wah, wah." Here he went into a new paroxysm of delighted gambols and squeaks, as if he were a young raccoon who had just pulled some other raccoon's tail.

"You old simpleton!" exclaimed Ninette, as she dashed on toward the house. In the veranda she was met by her mother, a dark, tall, full-formed, dignified and yet politic-looking woman, between the ages of forty and fifty.

"Ah, you bad subject!" said Madame Rambeau, with a smile. "What sort of behavior is this in a young lady! Running off to see young men alone, even if they are betrothed lovers—it won't do, Ninette. Such things make talk. Well," she added with an air of satisfaction, "is Mr. Vincent coming to dinner?"

"I haven't seen him," answered the girl, ready to cry with vexation and disappointment.

"Haven't seen him! Why, Jumboloro, told me—"

Then came Ninett's story as to whom she had seen and what she had heard in the Duchesne mansion. Madame Rambeau listened with a flush of astonishment, which at last changed into the paleness of alarm and anger.

"Is it possible that the man deceived us!" she exclaimed. "Is it possible that Duchesne was a liar and scoundrel!"

"Oh, mamma!—I should have taken Henry all the same."

Madame responded by a look which appeared to say, "I might not have let you."

Then ensued a long conversation concerning the deceased planter, from which we will draw such items of information as seem important, adding to them gossip derived from other sources.

Tillet Duchesne had been one of the richest landed proprietors of Louisiana. An only and spoiled child, he had grown up, not only with tastes for coarse revely, but so ignorant that he could not write the shortest note without faults of spelling. What means were there of driving learning into a youngster whose father was dead, whose mother humored all his whims, who used his tutors as butts for practical jokes, and who had drawn a knife on more than one of them? His whole manhood was spent in hunting, in eating and drinking, in gambling and low frolics. Sometimes he passed weeks in the purlieus of New Orleans, carousing with rowdies and even with criminals. He never went to the North or to Europe; conscious of his educational and moral deficiencies, he did not care to exhibit them to strangers; he was at ease only among the boon companions of his youth, or the roughs whom he encountered by hazard; his life was a round of stupid, unvaried, common-place, provincial debauchery.

At the age of sixty, three years before his death, the physical inability to carouse longer had wrought in him a species of reformation. He was now a gaunt, haggard man; his tall, stooping figure crawling painfully on crutches, his yellow and wrinkled face distorted with pain, his eyes red and watery from sleeplessness, his swollen feet swathed in flannel. His temper, always peevish and often fantastically violent, made him a terror to his dependants. Happily he was a bachelor and without relatives.

In these woful latter years, limited by his digestion to one cigar a day, unable to drink three glasses of wine without passing the night in purgatory, debarred from playing the flute (his only accomplishment) by the stiffness of his chalky fingers, he became an object of pity to people from whom his wealth had only been able to extort endurance.

Among those who now treated him with consideration were the Rambeau ladies. Madame Rambeau had once refused Duchesne; perhaps her heart relented toward an ancient lover; so it is often with women. As she was a widow and reputed to be politic, envious people of course charged her with designs upon the old bachelor's estate. When a couple of years had worn this suspicion threadbare, and when Ninette, having grown up to attractive womanhood, had refused two or three eligible offers, the whisper arose that the mother was seeking to catch Duchesne for the daughter.

We cannot say how it was; there is no denying that Madame Rambeau was artful and ambitious, and such a mother is sometimes her child's deadliest enemy. But nothing happened between the old man and the girl, beyond an intimacy in which the former was always a patient and the latter a nurse. She found it hard work to amuse him; it was wearisome to be always at cards, chess and backgammon, but at last, as if favored with a new childhood, he took a fancy to books. After she had repeatedly offered to read to him, and after he had as often refused with a grimace, he allowed her to try him with "Ivanhoe." In half an hour he became furiously interested, and henceforward he bought and heard fictions by the dozen.

We mention this subject because it leads us to a strange gleam of light upon a darkened nature. As Ninette read to the broken-down and little less than dying old debauchee the plea of Jeanie Deans for her sister, she observed that her listener repeatedly wiped his eyes with his finger.

"Does the light trouble you, Mr. Duchesne?" she asked.

"No, no, go on," he answered, turning slightly away from her.

The reading proceeded; he took out his handkerchief and covered his face with it; she rose and said, "I will draw the curtain, Mr. Duchesne."

"No, no, my dear," he answered, dropping his handkerchief and exposing his wet face. "The truth is, that I am snivelling over a novel."

Ninette's feelings, already much moved by pathetic narrative, gave way entirely before this confession, and she burst frankly into tears.

"My dear," said the old *roué*, "you are a good girl, and I have been a bad man. I am honored and bettered by sharing your feelings."

Presently followed another romance of more importance to Ninette. Enter a tall and handsome young man, somewhat too much of the Lara type for mature taste, but quite fitted to win the admiration of a young lady. Duchesne introduced him as Mr. Henry Vincent, the son of an old friend in Mobile. The two young people met constantly; the natural result was a love affair; should it be an engagement?

"You need not inquire about the boy," said Duchesne to Madame Rambeau. "I will guarantee him. A little wild, but good stuff, not like me. As to property, I will leave him my whole estate, if you will consent to the match, and he will take my name. I owe him something. His father saved my life in a rencontre. Besides, I like the young fellow. Besides, I like Ninette."

Well, the will had been made; the engagement had taken place; the young man had been sent off on business; during his absence the old man had died. Meanwhile Vincent's letters to Ninette had strangely ceased; and at last, instead of him, arrived this other claimant, Edward Roland.

[CONCLUSION IN THE NEXT NUMBER.]

SIR TRAY: AN ARTHURIAN IDYL.*

The widowed Dame of Hubbard's ancient line
Turned to her cupboard, cornered anglewise
Betwixt this wall and that, in quest of aught
To satisfy the craving of Sir Tray,
Prick-eared companion of her solitude,
Red-spotted, dirty-white, and bare of rib,
Who followed at her high and pattering heels,
Prayer in his eye, prayer in his slinking gait,
Prayer in his pendulous pulsating tail.
Wide on its creaking jaws revolved the door,
The cupboard yawned, deep throated, thinly set
For teeth, with bottles, ancient canisters,
And plates of various pattern, blue or white;
Deep in the void she thrust her hooked nose
Peering near-sighted for the wished-for bone,
Whiles her short robe of samite, tilted high,
The thrifty darnings of her hose revealed;
The pointed feature travelled o'er the delf,
Greasing its tip, but bone or bread found none,
Wherefore Sir Tray abode still dinnerless,
Licking his paws beneath the spinning-wheel,
And meditating much on savoury meats.

Meanwhile the Dame in high-backed chair reposed
Revolving many memories, for she gazed
Down from her lattice on the self-same path,
Whereby Sir Lancelot 'mid the reapers rode
When Arthur held his court in Camelot,
And she was called the Lady of Shallott;
And, later, where Sir Hubbard, meekest knight
Of all the Table Round, was wont to pass,
And to her casement glint the glance of love
(For all the tale of how she floated dead

* Readers who have not yet forgotten their "Mother Goose," and other juvenile classics, may, with some little difficulty, perhaps, recognize in these clever Tennysonian verses an old friend in a new dress. We copy from a late number of *Blackwood*.

Between the city walls, and how the court
Gazed on her corpse, was of illusion framed,
And shadow's raised by Merlin's magic art,
Ere Vivien shut him up within the oak.)
There stood the wheel whereat she spun her thread;
But of the magic mirror nought remained
Save one small fragment on the mantelpiece,
Reflecting her changed features night and morn.

But now the inward yearnings of Sir Tray
Grew pressing, and in hollow rumblings spake,
As in tempestuous nights the Northern seas
Within their caverned cliffs reverberate.
This touched her: "I have marked of yore," she said,
"When on my palfrey I have paced along
The streets of Camelot, while many a knight
Ranged at my reign and thronged upon my steps,
Wending in pride toward the tournament,
A wight who many kinds of bread purveyed—
Muffins, and crumpets, matutinal rolls,
And buns, which buttered, soothe at evensong;
To him I'll hie me ere my purpose cool,
And swift returning, bear a loaf with me,
And (for my teeth be tender grown, and like
Celestial visits, few and far between)
The crust shall be for Tray, the crumb for me."
This spake she; from their peg reached straightway down
Her cloak of sanguine hue, and pointed hat
From the flat brim upreared like pyramid
On sands Egyptian where the Pharaohs sleep,
Her ebon-handled staff (sole palfrey now)
Grasped firmly, and so issued swiftly forth;
Yet ere she closed the latch her cat Elaine,
The lily kitten reared at Astolat,
Slipt through and mewing passed to greet Sir Tray.

Returning ere the shadows eastward fell,
She placed a porringer upon the board,
And shred the crackling crusts with liberal hand,
Nor noted how Elaine did seem to wail,
Rubbing against her hose, and mourning round
Sir Tray, who lay all prone upon the hearth.
Then on the bread she poured the mellow milk—
"Sleep'st thou?" she said, and touched him with her staff;
"What, ho! thy dinner waits thee!" But Sir Tray
Stirred not nor breathed: thereat, alarmed, she seized
And drew the hinder leg: the carcase moved
All over wooden like a piece of wood—
"Dead?" said the Dame, while louder wailed Elaine;
"I see," she said, "thy fasts were all too long,
Thy commons all too short, which shortened thus
Thy days, tho' thou mightst still have cheered mine age
Had I but timelier to the city wonned.
Thither I must again, and that right soon,
For now 'tis meet we lap thee in a shroud,
And lay thee in the vault by Astolat,
Where faithful Tray shall by Sir Hubbard lie."

Up a by-lane the Undertaker dwelt;
There day by day he plied his merry trade,
And all his undertakings undertook:
Erst knight of Arthur's Court, Sir Waldgrave hight,
A gruesome carle who hid his jests in gloom,
And schooled his lid to counterfeit a tear.
With cheerful hammer he a coffin tapt,
While hollow, hollow, hollow, rang the wood,
And, as he sawed and hammered, thus he sang:
Wood, hammer, nails, ye build a house for him,
Nails, hammer, wood, ye build a house for me.
Paying the rent, the taxes, and the rates.

I plant a human acorn in the ground,
And therefrom straightway springs a goodly tree,
Budding for me in bread and beer and beef.

O Life, dost thou bring Death or Death bring thee?
Which of the twain is bringer, which the brought?
Since men must die that other men may live.

O Death, for me thou plump'st thine hollow cheeks,
Mak'st of thine antic grin a pleasant smile,
And prank'st full gaily in thy winding sheet.

This ditty sang he to a doleful tune
To outer ears it sounded like a dirge,
Or wind that wails across the fields of death.
'Ware of a visitor, he ceased his strain,
But still did ply his saw industrious.
With withered hand on ear, Dame Hubbard stood;
"Vex not mine ears," she grated, "with thine old
And creaking saw!" "I deemed," he said, and sighed,
"Old saws might please thee, as they should the wise."
"Know," said the Dame, "Sir Tray that with me dwelt
Lies on my lonely hearthstone stark and stiff;
Wagless the tail that waved to welcome me."
Here Waldgrave interposed sepulchral tones,
"Oft have I noted when the jest went round.
Sad 'twas to see the wag forget his tale—
Sadder to see the tail forget its wag."
"Wherefore," resumed she, "take of fitting stuff,
And make therewith a narrow house for him."

Quoth he, "From yonder deal I'll plane the bark,
So 'twill of Tray be emblematical;
For thou, 'tis plain, must lose a deal of bark,
Since he nor bark nor bite shall practice more."
"And take thou, too," she said, "a coffin-plate,
And be his birth and years inscribed thereon
With letters twain 'S. T.' to mark Sir Tray,
So shall the tomb be known in after-time."
"This too," quote Waldgrave, "shall be deftly done;
Oft hath the plate been freighted with his bones,
But now his bones must lie beneath the plate."
"Jest'st thou?" Dame Hubbard said, and clutched her crutch,
For ill she brooked light parlance of the dead;
But when she saw Sir Waldgrave, how his face
Was all drawn downward, till the curving mouth
Seemed a horseshoe, while o'er the furrowed cheek
A wandering tear stole on, like rivulet
In dry ravine down mother Ida's side,
She changed her purpose, smote not, lowered the staff;—
So parted, faring homeward with her grief.
Nearing her bower, it seemed a sepulchre
Sacred to memory, and almost she thought
A dolorous cry arose, as if Elaine
Did sound a caterwauling requiem.
With hesitating hand she raised the latch,
And on the threshold with reluctant foot
Lingered, as loath to face the scene of woe,
When lo! the body lay not on the hearth,
For there Elaine her flying tail pursued,—
In the Dame's chair Sir Tray alive did sit,
A world of merry meaning in his eye,
And all his face agrin from ear to ear.

Like one who late hath lost his dearest friend,
And in his sleep doth see that friend again,
And marvels scarce to see him, putting forth
A clasping hand, and feels him warm with life,
And so takes up his friendship's broken thread—
Thus stood the Dame, thus ran she, pattering o'er
The sanded tiles, and clasped she thus Sir Tray,
Unheeding of the grief his jest had wrought
For joy he was not numbered with the dead.

Anon the Dame, her primal transports o'er,
Bethought her of the wisdom of Sir Tray,
And his fine wit, and then it shameful seemed
That he bareheaded 'neath the sky should go
While empty skulls of fools went thatched and roofed;
"A hat," she cried, "would better fit those brows
Than many a courtier's that I've wotted of;
And thou shalt have one, an' my tender toes
On which the corns do shoot, and these my knees
Wherethro' rheumatic twinges swiftly dart,
Will bear me to the city yet again,
And thou shalt wear the hat as Arthur wore
The Dragon of the great Pendragonship."
Whereat Sir Tray did seem to smile, and smote
Upon the chair-back with approving tail.

Then up she rose, and to the Hatter's went,—
"Hat me," quoth she, "your very newest hat;"
And so they hatted her, and she returned
Home through the darksome wold, and raised the latch,
And marked, full lighted by the ingle-glow,
Sir Tray, with spoon in hand, and cat on knee,
Spattering the mess about the chaps of Puss.

THE LIMESTONE FOUNTAINS OF BERKELEY.

In the parishes of St. John's and St. Stephen's, South Carolina, there is a section of country known as the "Limestone region," extending from the head-waters of the Cooper river, northward to the Santee, and as high up as Eutaw springs. This limestone or fossil marl is composed of the remains of sea shells, corals, and other marine animals,—and furnishes proof that a deep sea once covered the country for a long period of time. The remains of these animals now hardened and cemented together, from a solid rock of hundreds of feet in thickness. As the process of deposit must have been slow, some idea may be formed of the length of time required to produce such an effect.

Like all other limestone formations, there are chasms, fissures and caves, caused by the slowly corroding action of rain water percolating the crevices.

The country being level, these caves and chasms are always filled with water, and form a net work of subterranean streams, corresponding with the brooks and rivers above ground. When these water-courses in their underground passage come near the surface, the superincumbent earth often gives way, and falling in, leaves a fountain of clear limpid and deep water, the subterranean, stream flowing on until it finally finds a vent at some lower spot, and then flows off on the surface, in a continuous stream. What are known as the dry "sinks" are produced by the same cause, except that the body of superincumbent earth being greater, fills up the

chasm, and merely produce a depression in the surface.

These springs which form so conspicuous a feature of the country, are of various sizes, some of the largest, of great beauty, and quite picturesque from the effects of the surrounding scenery.

The Eutaw Springs, made memorable in history as the battle ground of 8th September, 1781, is interesting not only as classic ground, but for its volume of water, and the quiet beauty of the o'er arching trees. The stream gushes forth from the base of a cliff of solid limestone, and spreading out into a wide basin of clear transparent water, takes its course towards the Santee, a mile or two off.

The longest of these springs is at Woodboo, the old family place of the Mazycks, a few miles above Monck's Corner, and near the Santee Canal. The hidden stream which has been working its tortuous way, among the subterranean caverns below for untold ages, coying with the graves of the old molluscs where skeleton forms are here entombed in the solid rock, breaks through its strong barriers, and spreads forth into a basin of thirty or forty yards in diameter; and then passes off in a bold stream to form one of the branches of the Cooper river. It is a lovely spot, deeply shaded by the old trees that throw their protecting arms across, and the climbing vines which hang in graceful festoons over the pellucid water. The eye is strained in looking down into the blue depths below where the water issues from its unknown sources, but there is nothing to tell "whence it cometh." Full of mystery to the simple negro, he looks with superstitious awe upon these "dark unfathomed caves," and peoples their unknown depths with nymphs and water sprites.

There are some who boldly profess to have seen these mermaids (or "Cymbees" as they call them) sporting among the rocks below,—or at times, sitting on the banks at night, "when the moon shines bright," combing out their long tresses.

Here, in the olden time, some native Hiawatha may have gone forth

In his birch canoe exulting,
With his fishing rod of cedar
Of the twisted bark of cedar.
Through the clear transparent water
He could see the fishes swimming
Far down in the depths below him!
See the yellow perch, the sahwer,
Like a sunbean in the water,
See the shawgashee, the craw-fish,
Like a spider on the bottom,
On the white and sandy bottom.

It is the popular belief among the negroes that each spring has its presiding genius—a guardian "Cymbee" to protect and inhabit it. When any one troubles the waters, or does injury to the spring, this gives displeasure, and causes the mysterious personage to take up another abode, and let the waters run dry. Some of the fountains, as I stated before, are merely deep sinks in the earth, reservoirs of pure transparent water, the stream slowly flowing through and continuing its subterranean course. Sometimes there are several quite near to each other—a series of fountains, connected by natural bridges (as it were) of ten, twenty, or fifty yards in length.

At the "Fountain Grove" plantation, a few miles east of the N. E. Railroad, a large number of these are connected together by subterranean passages. There is a tradition which gives melancholy interest to the spot. It is said that an Indian boy, curious to penetrate the mystery, determined to explore the passage from one to the other. He descended into the deep waters and entered the chasm, but his friends waited in vain for his emergence from the next fountain. He was never seen again; and it is supposed he became entangled in the water grass and vines which obstructed the passage. No trace of his fate was ever discovered, and the sad event gave a tragic mystery to these dark waters, and increased the superstitious dread which hangs over their unknown depths. The late Mrs. Munden, in one of her published poems, makes use of this incident to commemorate the tragic fate of this brave Indian boy.

MEMINI MEMORIA.

STORY OF THE FIRST TELEGRAM.

The bill met with neither sneers nor opposition in the Senate, but the business of that House went on with discouraging slowness. At twilight on the last evening of the session (March, 3, 1843) there were 119 bills before it. As it seemed impossible for it to be

reached in regular course before the hour of adjournment should arrive, the Professor, who had anxiously watched the tardy movements of business all day from the gallery of the Senate chamber, went with a sad heart to his hotel and prepared to leave for New York at an early hour the next morning. While at breakfast, a servant informed him that a young lady desired to see him in the parlor.

There he met Miss Annie Ellsworth, then a young school girl—the daughter of his intimate friend, Hon. Henry L. Ellsworth, the first Commissioner of Patents—who said, as she extended her hand to him; "I have come to congratulate you."

"Upon what?" inquired the Professor.

"Upon the passage of your bill," she replied.

"Impossible! Its fate was sealed at dusk last evening. You must be mistaken."

"Not at all," she responded. "Father sent me to tell you that your bill was passed. He remained until the session closed, and yours was the last bill but one acted upon, and it was passed just five minutes before the adjournment; and I am so glad to be the first one to tell you. Mother says, too, that you must come home with me to breakfast."

The invitation was readily accepted, and the joy in the household was unbounded. Both Mr. and Mrs. Ellsworth had fully believed in the project, and the former, in his confidence in it and in his warm friendship for Professor Morse, had spent all the closing hours of the session in the Senate chamber, doing what he could to help the bill along, and giving it all the influence of his high personal and official position.

Grasping the hand of his young friend, the Professor thanked her again and again for bearing him such pleasant tidings, and assured her that she should send over the wires the first message, as her reward. The matter was talked over in the family, and Mrs. Ellsworth suggested a message which Professor Morse referred to the daughter, for her approval; and this was the one which was subsequently sent.

A little more than a year after that time, the line between Washington and Baltimore was completed. Professor Morse was in the former city, and Mr. Alfred Vail, his assistant, in the latter; the first in the chamber of the Supreme Court, the last in the Mount Clare depot, when the circuit being perfect, Professor Morse sent to Miss Ellsworth for her message and it came.

"What hath God wrought!"

It was sent in triplicate in the dot-and-line language of the instrument to Baltimore, and was the *first message ever transmitted by a recording telegraph.*

The story of this first message has been often told with many exaggerations. It has roamed about Europe with various romantic material attached to it, originating mainly in the French imagination, and has started up anew from time to time in our own country under fresh forms, but the above story is simply and literally true. An inventor in despair receives the news of his unexpected success from his friend's daughter, and he makes her a promise which he keeps, and thus links her name with his own, and with an invention which becomes one of the controlling instruments of civilization for all time.—*Scribner's Monthly.*

LIGHT AND THE COMPLEXION.

The action of light on the human skin is manifest. It browns and tans the teguments, by calling out the production of the coloring-matters they contain. The parts of the body usually bare, as the skin of the face and hands, are darker than others. In the same region, country people are more tanned than town residents. In latitudes not far apart, the inhabitants of the same country vary in complexion in a measure perceptibly related to the intensity of solar light. In Europe three varieties of color in the skin are distinctly marked: olive-brown, with black hair, beard, and eyes; chestnut, with tawny beard and bluish eyes; blond, with fair, light beard and sky-blue eyes. White skins show more readily alterations occasioned by light and heat; but, though less striking, facts of variation in color are observable in others. The Scytho-Arabic race has but half its representatives in Europe and Central Asia, while the remainder passes down to the Indian Ocean, continuing to show the gradual rising heat of climate by deepening brown complexions. The Himalayan Hindoos are almost white; those of the Deccan, of Coromandel, Malabar, and Ceylon, are darker than some negro tribes. The Arabs, olive and almost fair in Armenia and Syria, are deep brown in Yemen and Muscat. The Egyptians, as we go from the mouths of the Nile up stream toward its source, present an ascending chromatic scale, from white to black; and the same is true of the Tuariks on the southern side of Mount Atlas, who are only light olive, while their brethren in the interior of Africa are black. The ancient monuments of Egypt show us a fact equally significant. The men are always depicted of a reddish brown; they lived in the open air, while the women, kept shut up, have a pale yellow complexion. Barrow asserts that the Mantchoo Tartars have grown whiter during their abode in China. Remusat, Pallas, and Gutzlaff, speak of the Chinese women as remarkable for a European fairness. The Jewesses of Cairo or Syria, always hidden under veils or in their houses, have a palid, dead color. In the yellow races of the Sumatra Sound and the Maldives, the women, always covered up, are pale like wax.

For Our Young Folks.

THE TRAVELER'S FRIEND.

"Tell me about this tree, sister Mary?" said little Harvey, holding up his picture-book. "It looks just like a fan, or a peacock's tail."

Sister Mary laid down her work and took the book from Harvey's hand.

"Oh, this is the 'Traveler's Friend,' and grows on the island of Madagascar," she replied; "and a wonderful tree it is; for it not only gives water to thirsty travelers, but cups to drink from, and plates, dishes, table-cloths, and a great deal more besides. Indeed, some of the people on the island actually build their houses and furnish them with this tree."

"Cups, and spoons, and table-cloths; houses and furniture! I guess that's a traveler's story, as I heard papa say yesterday."

"It's true as I say, Harvey. Now let me tell you all about it. You see one man holding a cup and another with a rod in his hand?"

"Yes."

"And you see the broad leaves and the long stems?"

"Yes."

"Well, after sunset the dew gathers on the leaves of this tree and runs in little streams down the long branches, at the bottom of each one of which is a large hollow place, where it collects, and is held in by one branch lying tightly over another. The traveler has only to thrust a stick in between the branches, as you see in the picture, and lift one of the over-lapping sides, when out will flow the water like a stream from a tiny fountain. It is pure and cool, with only a slight taste of the leaf."

"Isn't that nice!" exclaimed Harvey. "And now," he went on, "tell me about the spoons, the plates, and furniture, and table-cloths."

Sister Mary smiled pleasantly as she answered:

"The spoons, and plates, and table-cloths, are not exactly like those we used at breakfast-time this morning; still the natives are very well satisfied with them. Look at the leaf on the end of each branch. How long do you think these leaves are?"

"Maybe a foot," said Harvey.

"They are several feet long and quite broad. Large enough to cover you all over like a blanket."

"Oh, I wish I had one."

"It wouldn't be of much use to you," replied Sister Mary. "But then you don't live in Madagascar. Now these leaves are gathered in large quantities, and sold every morning in the markets. The people use them as table-cloths, or cut them in smaller pieces for dishes and plates; and even fold them into the shapes of spoons and cups, and use them as lading and drinking vessels."

"I guess they are not very rich people who do this," said Harvey.

"No; they are the natives who live on the eastern side of the island. This singular tree is also called 'The Builder's Tree,' because the natives make of its long stems the partitions and often the sides of their houses. Then the hard outer bark is stripped from the inner and soft part, and having been beaten out flat, is laid down for flooring."

"Anything more?" asked Harvey, who was beginning to feel amused at the many and singular uses of this tree.

"Yes; the leaves when green are used as paper to wrap up packages; and they will keep out the wet like rubber cloth."

"It grows, you say, on the island of Madagascar. Where is this island?"

"Madagascar lies a little way off from the south-east part of Africa, and is larger than Great Britain. The people, in number about five millions, are heathen and ignorant. They have a king for a ruler. There are no wide carriage-roads through the island, but only

paths; and travelers have to be carried in palanquins on men's shoulders. When you are older you will study geography, which is a very interesting study, and learn more about this island, and many other remarkable places in the world."

"I wish we had a 'Traveller's Friend' in our garden," said Harvey, as he shut his picture-book. "Wouldn't I have a grand time building houses and making all kinds of nice things?"

Domestic Economy.

HOUSEHOLD NOTES.

Coffee Making.

Bad coffee—we might say execrable coffee—is the rule on American tables. This is not because the raw material is bad, for there is always a supply of excellent Java and Rio coffee, (to say nothing of other varieties) in market, but because it is not properly treated. It is often badly roasted; it is afterwards permitted to lose its flavor by exposure to the air; it is generally too coarsely ground; it is almost always boiled too much and not well settled; it is served with raw, instead of boiled milk—all of which are fatal errors. Avoid them and—1. Procure good raw coffee; 2. Roast (it in a closed vessel if practicable,) till the oil appears on the surface of the berry and no longer; 3. Grind very fine and keep in a glass self-sealing can, or grind only so much as is required for use at one time; 4. If boiled at all let it be not over three minutes, and be well settled; 5. It is best made by filtering boiling water through it in a French coffee pot, or by enclosing it in a flannel bag to be suspended in the pot, and then pouring boiling water upon it, in which way no settling is required and no aroma is lost; 6. Let it be *very* strong and dilute with rich boiled milk, adding cream, if you have it; 7. Sweeten with white sugar. If you do not like coffee made in this way—well, tastes differ. *We* think it delicious.

The Fig as a Pickle.

The fig makes the best sweet pickle in the world, and we have no doubt but that an immense business might be built up here in the South in making fig pickles alone. The process is very simple, and a little experience will make it always a complete success. For pickling, the fruit must be matured, but not dead ripe—not too soft—and should be picked with the stems adhering. The recipe for pickling has already been given in the Rural Carolinian, but for the benefit of new subscribers we will repeat it here:

Put the fruit in a vessel; sprinkle with salt in the proportion of one half pound to each peck of fruit; pour boiling water on the whole and let stand twelve hours; afterwards put the fruit in a colander, and if too salt rinse with cold water. Fill the jars with the fruit; take strong vinegar; add a quarter of a pound of sugar to each quart; boil and pour the hot vinegar upon the fruit. In filling the jars with the fruit, some cinnamon bark and cloves should be mixed through it.

Some Uses of Ammonia.

A "housekeeper" in the *Michigan Farmer*, says: For washing paint, put a tablespoonful in a quart of moderately hot water, dip in a flannel cloth, and with this merely wipe over the wood-work; no scrubbing will be necessary. For taking grease spots from any fabric, use the ammonia nearly pure, and then lay white blotting-paper over the spot and iron it lightly. In washing laces, put two drops in warm suds. To clean silver, mix two teaspoonsful of ammonia in a quart of hot soap suds, put in your silver and wash it, using an old nail brush or tooth brush for the purpose.

INDUSTRIAL ITEMS.

Great things come from small beginnings. The small beginning, in this case, is a pamphlet of 45 pages, entitled, "Transportation for the South and West, *via* Victoria Bluff, Port Royal Bay, South Carolina, United States of America," in which are set forth in well arranged facts and figures the great need of a direct communication between the West and South, for the transportation of all kinds of freight and a grand deep water port and commercial city on the Atlantic coast; with the means by which these ends can be attained. Many of the propositions laid down cannot be gainsaid, and we can hardly believe that they can be much longer ignored by men of capital, brains and foresight. Copies of this interesting pamphlet can be had by addressing the author, Winborn Lawton, Esq., Charleston, S. C.

We learn from the New Orleans *Picayune*, that a Texas meat company has been formed for purpose of manufacturing preserved meats and meat extracts. Thousands of bullocks are utilized annually for an export trade without affecting the price of stock in Texas, since there are about 10,000,000 head of cattle in the State. The natural increase in the present herds supplies more animals than can be utilized profitably by any process heretofore in use for preserving and transporting meat.

The project of a ship canal across the peninsula of Florida is again being agitated in the south. An eminent civil engineer of Mobile has addressed a communication to the Board of Trade of that city favoring the enterprise, and suggesting Tampa Bay, which is a good harbor, as the best terminus for the gulf side.

RECIPES.

JUJUBE PASTE.—Take jujubes one pound, and water two quarts; boil half an hour; strain with expression, settle, decant the clear liquid, and clarify with white of eggs. Add a strained solution of gum arabic, six pounds in four quarts of water, and to the mixture six pounds of white sugar; gently evaporate, at first constantly stirring, and afterwards without stirring, till reduced to the consistence of soft extract; add orange flower water—six ounces, and place the pan in a vessel of boiling water. In twelve hours carefully remove the scum, and pour the mass of paste into slightly oiled tin moulds. This recipe given me some years before the late war by the Superintendent of the Agricultural Department of the Patent Office. R. C.

STRAWBERRY SHORTCAKE.—Have your berries culled and quite ready for serving, and as cool and fresh as possible. Bake two shortcakes the size of a breakfast plate, and half an inch thick: mix as you would for pie-crust. The moment they are cooked, split them open, butter on both sides of each half cake, spread the berries generously and sugar them plentifully, until you have three layers of berries alternating with the shortcake. On the top half-cake put no berries, put only butter and sugar. Pour a cup of rich cream over the top, and eat immediately, cutting the cake as you would a pie. If you cannot procure cream, do not attempt milk as a substitute; be content with butter and sugar. This should be prepared in as rapid a manner as possible.

LEMON PIES.—Two lemons, four eggs, two spoonsful melted butter, eight spoonsful of white sugar; squeeze the juice and grate the rind of the lemons. Stir together the yolks, sugar, butter, juice and rind. Cover the plate with pastry, pour the mixture in, bake till the pastry is done. Then beat the whites of the eggs to a stiff froth, stir into it four spoonsful of sugar, put on the pie, and place it in the oven till a delicate brown. This quantity makes two common sized pies.

SALAD DRESSING.—This is excellent both for salad and for sliced tomatoes in summer. Take the yolk of one fresh egg and mix it with two table-spoonsful of olive oil very slowly, add one and one-half spoonsful of mustard, three spoonsful of salt, a little pepper, and, last of all, two spoonsful of vinegar. Beat the white of the egg to a stiff froth, and lightly stir in.

CHOCOLATE PUFFS.—One half pound of sugar sifted, one of chocolate scraped very fine, and mix together. Beat the white of an egg and stir in your chocolate and sugar. Continue to beat until it is stiff paste. Sugar your paper, drop them on it and bake in a slow oven.

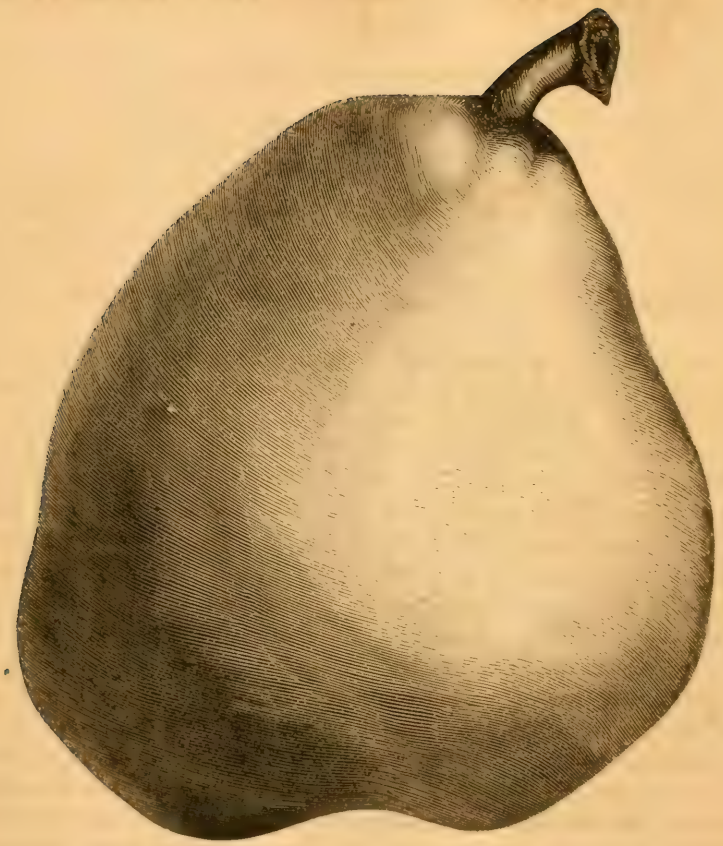
MERE MENTION.

It may interest the readers of the RURAL CAROLINIAN to learn that they share the pleasure and profit derived from their favorite magazine with readers in every quarter of the world, especially in all tropical and semi-tropical countries, from Brazil to Japan. Among the rest we have two subscribers in the Fiji Islands.

——"The Thurber," a new Southern peach, due to the care and skill of Dr. L. E. Berckmans, Augusta, Ga., and dedicated to Prof. George Thurber, chief editor of *The American Agriculturist* is described by *The Farmer and Gardener* as fully equal to the popular Chinese Cling, of which it is a seedling.

——A girl thirteen recently brought to market at Americus, Ga., a 500 pound bale of cotton, the result of her own unaided labor, from the ploughing of the soil to the picking and ginning.

——There are now over one hundred Subordinate Granges of the Patrons of Husbandry in Mississippi. The number in South Carolina is, we believe, about one hundred and twenty-five.



Duchesse d' Angouleme Pear

THE

Rural Carolinian.

Progress with Prudence, Practice with Science.

D. H. JACQUES, Editor.

Vol. IV.] CHARLESTON, S. C., JUNE, 1873. [No. IX.

Thoughts and Suggestions for the Month.

A late spring, with drought and frost in April, set back considerably the operations of the planter and will crowd into the present month some work usually accomplished earlier. Cotton is still comparatively small and tender, and must be worked with care. Where not yet thinned to a stand, that operation should receive early attention. No plant can have a greater enemy than another plant of the same species. Each requires the same food and the "struggle for life" between them is unremitting. We must, as soon as practicable, reduce the number to what may be considered a proper "stand" for the soil. Mr. David Dickson, of Sparta, Georgia, leaves two or three stalks in each hill, making, in his way of planting, an average of eight stalks to the square yard. Experience has taught him that this is about the right number for his land. Keep the sweeps moving. Shallow culture is the true plan, but you may still run deep in the middles with a "lifter," if the condition of the soil should require it. On dry uplands, the level system of cultivation is far better than the plan of high sharp ridges so generally adopted. We believe this is not only sound in theory, but has been demonstrated by experience. On flat lands, especially if the season be wet and the land not well drained, it is necessary to throw up the ridges to prevent water from settling about the roots.

———The "laying by" of the corn crop is an operation which requires about as much care and judgment as any part of the season's work. To make it thorough and to leave the fields clean, and yet not injure the roots of the growing crop, is what must be aimed at. To break the roots now, when droughts are to be expected, or to throw all the loose soil into steep ridges along the row may prove fatal to the most promising crop. We should leave the ground mellow on the surface but nearly level, except where, as on wet low lands, ridging or hilling is absolutely necessary.

———The harvesting of the small grain crops is often sadly interfered with by the urgent needs of the corn and the cotton; but if it pays, as we fully believe, to

grow wheat, rye, oats and barley, it certainly will pay to save the crop when grown. Do not let the wheat stand too long. Unless intended for seed, it should not be left till dead ripe, but be cut when beginning to harden. It will be fit for the thresher after one or two days of clear sunshine. Oats require more curing, and unless carefully attended to often get badly damaged by heating. Labor-saving reapers and mowers are among the most useful inventions of the day and must inevitably come into general use among us, in due time; but at present pine stumps and the ignorance, prejudice and wrong-headedness of our negro laborers stand sadly in the way of their success. Labor, judicious management and perseverance will, in the end, overcome both these obstacles.

———It has been our custom heretofore, during the growing season, to request our readers to report on the area planted in the various crops, in their respective neighborhoods, as compared with the previous year, and the condition of the crops. We need not repeat our questions, but we shall be glad to receive such information each month, in regard to the crop out-look, as correspondents may be able to furnish; but to be of any use it must reach us before the 15th of the month previous to the one in which it is to appear. Will readers be kind enough to bear this in mind when looking at their own crops, or those of their neighbors?

———Sweet potatoes must not be neglected. Continue to plant your slips or draws, or better still, cuttings from earlier planted vines, which make the best crop. Take advantage of a rainy day for planting if you can, but plant whether it rain or not. We have planted in the midst of severest drought with the loss of very few plants. "Grout" the plants by plunging the roots into a batter composed of equal parts of fresh cow-dung, wood ashes and vegetable mould, mixed with water to the proper consistency to adhere to them. This will generally insure a perfect "stand," and hasten the growth of the vines.

———Drought is one of the greatest obstacles with which the American farmer has to contend. We cannot, by any means now known, prevent the dry and heated terms to which our climate is subject, and we again call the attention of our readers to the importance of securing, so far as possible such conditions of the soil as will in the highest possible degree fit it for the absorbtion and retention of moisture. Careful experiments should be made with a view to determine what are the best means to enable our crops to resist long continued dryness.

———Plant peas, not only among your corn but as a separate crop. You cannot well have too large a quantity of this valuable stock-feed. A bushel of seed will plant four acres, if properly distributed in the drills, so as to require no chopping out.

———For forage, Egyptian millet, sorghum and drilled corn, as well as peas, may still be planted, but, as we have said before, the soil must be heavily manured, deeply broken up and thoroughly pulverized to insure success.

———It is not too early to prepare for the turnip crop, as the "patch" should have several thorough ploughings and be manured heavily. In the RURAL CAROLINIAN for July, 1872, may be found full directions.

Notes on Planting.—V.

The question of labor has, for the last four years, been the most difficult problem with which the *Southern Agriculturist* has been embarrassed. When the emancipation of the negro slaves was enforced, it found the planter unacquainted with free labor, the freedman ignorant of the responsibilities of freedom, and in adjusting themselves to their new relations, every step has been retarded by the baleful influences of political faction.

There are now three kinds of farm labor, more or less procurable in the Southern States—the native white, the immigrant white, and the negro freedmen. There is and was, during the existence of negro slavery, a large amount of native white labor devoted to the farm. In the section of which we write it has always been employed chiefly when the laborer was also proprietor of his own homestead, or a tenant under lease. It is sometimes, but not commonly, found laboring for wages by the year. At day wages and job work it is procurable, and is often, as in harvest, freely used. In a similar manner immigrant white labor might become useful to the planter. As regular laborers in gangs on a plantation, it is not thought that they are desirable. An experiment with Germans in 1869, made by the writer, was, as far as it went, not a success. It was under the favorable circumstances of having none other than white labor on the place—some ten or twelve Germans and half as many native whites—but under the disadvantage of the non-residence of the proprietor. They were good workers but cost too much to compete with the cheaper negro laborer in cotton growing, and were found to be more restless. By the middle of June they had all deserted or been discharged for contumacy, and the crop had to be completed by day labor of native whites and negroes.

Practically the freed negro is the reliance of the planter for field work, and to the employment and application of his labor our notes will be confined. The various modes of employing him, by which he is made a copartner in the risks and profits of the year, have little to recommend them. Slovenly husbandry is its invariable concomitant, and when money seems to be made, it will most generally, upon an inspection of the land, the stock and the accounts at the end of the year, be found that the apparent profit is sunken capital. Reason and experience alike dictate that the chances of profit and loss are best confined to the planter who risks his capital and claims the direction of the enterprise, while the laborer, who is expected to work under the orders of another, should, if he discharges his duty with fidelity, receive his stipulated hire, whatever may be the result.

The mode of employment and compensation of negro farm laborers, embodied in the following form, has been found to work well, in the writer's experience :

STATE OF SOUTH CAROLINA, }
——— COUNTY. }

1. The undersigned, L. M., agrees to furnish each laborer hereby employed, lodging, and to allow him or her fuel ; to allow the laborer to rear pigs and poultry for the use of his family, the same to be kept up when required ; to allow each

laborer a piece of ground of the size below mentioned, for a crop, which said L. M. is to plough as often as he does his own, but to do no other work upon it; not to require work upon the last half of every Saturday, and to pay the money wages and furnish the rations below mentioned; the money wages to be payable one-half at the end of each month, the other at the expiration of the contract.

2. The undersigned laborers, each for himself, or for himself and family, as stated, agree to work faithfully for said L. M. on Short Staple Plantation, under the regulations thereon established, until the 25th day of December next, to do all manner of farm work, including ditching, fencing, clearing lands, &c., &c., and to accept the compensation stipulated. No wages are to be paid for time lost, except that properly lost from bad weather, of which L. M. is to judge, and the laborer is to pay for rations consumed during absence from work, five and a half days to count as a week. The laborer further agrees to forfeit the value of losses or of damage to stock or other property of said L. M. resulting from carelessness or dishonesty on his part; to forfeit all wages and be discharged if guilty of repeated or prolonged absence from duty, gross incivility, disorderly conduct on the place, theft, or wilful disobedience of orders, and to be liable to discharge, with forfeiture of half wages, for habitual negligence of duties. In all cases of discharge the laborer to forfeit his growing or ungathered private crop. He further submits to L. M. the discretion of procuring, in cases of sickness, the services of a physician, his charges to be paid out of laborer's wages.

3. Each head of a family shall control, within this contract, those for whom he contracts, and shall be responsible for the observance by his non-working family of such plantation rules as properly apply to them. It is further stipulated between the parties that all members of laborers families, resident on the plantation and not employed regularly under this contract, shall be liable at all times to the call of said L. M, as irregular laborers at — cents for a day's work for a woman, and in task work for as much as she does, in proportion to a man, his labor being put at — cents per day, the irregular laborer feeding himself, and wages due upon performance of work.

Witness our hands, January 18. L. M.

In presence of:

C. D.

Laborer's Signatures.

Wages begin.	Wages per month.	Rations per week. Bacon, lbs.	Meal, pecks.	Molasses, qts.	Crop in acres.	Names Laborers.	Mark.	Witness.
January 1.....	.....	.....	.....	.....	....	E. F.	X	C. D.
January 10...	.....	.....	.....	.....	....	E. F. for son, G. H.	X	C. D.
January 12...	.....	.....	.....	.....	....	J. K. for self and wife, Mary, &c.	X	C. D.

It will be observed that the regular laborer's principal compensation is a fixed amount in rations and money, and so much of it as is derived from the product of

his crop on the small farm (never exceeding two acres) ploughed for him, possesses that element of uncertainty which, it must be confessed, adds zest to all human enterprises. It will be governed not only by the fluctuations of seasons and markets, but will depend largely upon the hoe work which he is expected to give it during his unemployed half Saturday. This feature of a small crop for himself as well as the privilege of rearing stock, seems to have influence in fixing the laborer upon the place. The stock are rigidly limited in number and run in the plantation pasture, but must be kept up in pens, or even gotten rid of, if required, when troublesome in breaking fences or interfering with newly seeded lands. The lands allotted by contract to the laborer, he invariably plants in corn or cotton, or both. Each cabin has also, in addition, a sufficient garden plat, which he puts in vegetables. Every effort is made to keep current payments to the regular hands within the stipulated limit, one half of the wages earned to date, so as to have a considerable proportion payable at the end of the year. The half Saturday lost from work is objectionable in some respects, as the work animals are thus idle, perhaps more than required for rest, but the negroes value the privilege highly, and while it necessitates more laborers, of course it reduces the money wages paid to each. The provision for calling in a physician is for cases of malingering. The rations furnished by contract are never more than sufficient for the contract signer. His family being thus dependent for subsistence upon their own labor, little trouble is had in getting them to respond to the calls upon them as irregular laborers. Steady work day in and day out can not be counted upon from these. After their necessities are supplied they will, without actual refusal, manage to evade the call for labor. They are found to work from half to two-thirds of their time. Heads of families and grown single men or women alone sign the contract. If it is desired to work a plantation which twenty able slaves would have cultivated, about fourteen or fifteen regular hands are secured for the year in January. Among their families will usually be found in women and children old enough to work, the equivalent of ten or twelve full hands, and in making the crop, resource is had at critical times to day laborers non-resident on the place, and who are farming on their own account in the vicinity. With such a supply of labor, a twenty hand crop of slave times may, with safety, be planted, and can be thoroughly cultivated. It is sometimes done with less resident labor, reliance being had to a larger extent upon that procurable by the day in the vicinity. In the last six crops the per centage of work in full days labor, in making the crop, has, under this system, with the writer, been as follows:

Regular hands 69 per cent.
Irregular hands 26 per cent.
Non-resident hands 5 per cent.

In harvesting, the proportion of irregular and non-resident labor is much increased. No supplies are kept for sale to the laborers. The articles composing the ration, bacon, meal and molasses, are issued at cost, in part pay to the irregular and non-resident hands when desired. Shop keeping is avoided. It tempts the negro to extravagance with resulting dissatisfaction at the end of the year, and

unless on very large estates the business is too small to pay for the annoyance. Neither is it necessary to the laborers convenience unless in remote localities.

It may be found that the foregoing system of employment is not applicable every where. The negro is naturally a conservative and detests innovation. When other modes of employment have become established, the details must be modified to approximate the customs of the neighborhood. The only essential insisted upon is that specific and previously ascertained pay shall follow upon specified services faithfully rendered.

The management and application of farm labor covering, as it does, so much of the question of success, can not within our limits be fully discussed, and after all, whether it is advantageously done, depends chiefly upon the person entrusted with the charge. There are a few points, however, which deserve some allusion. The established plantation rules of labor should be strictly adhered to, though in the particular instance it inconveniences the proprietor. When change is necessary it should be made with formality at the end of the year. While the regulation tasks and duties are rigidly insisted upon, no extra work or time should be claimed, even upon emergency, without extra pay. Like all ignorant persons, the negro is suspicious and keenly alive to injustice, real or supposed. He is tractable enough where his obligations are clear and his confidence secured. Childlike in many things, patience is essential at first in difficulties with him, but when patience has ceased to be a virtue, firmness becomes of equal importance. Whenever practicable work should be done and payment made by the task or piece. An inspection to see that the work is properly executed is all that is then necessary, and the payment is commensurate with the labor performed. By a little management nearly all the work of the plantation can be thus paid for. With laborers employed by the month or year, give a reasonable task, and pay extra for all work done over, while of course a falling short is charged as lost time. Gang work requires the constant presence and pushing of the overseer, gives numerous occasions of irritation on both sides, and it may be relied upon with certainty that the amount of work obtained from each will be measured by the capacity of the most inferior hand.

The slave tasks which in most instances could, by pushing, be readily accomplished in two-thirds of the time, is still a day's work with the negro, and must be accepted as such by his employer. Beyond it should be considered and paid for as extra work. In estimating hoe work, six thousand eight hundred yards of plain flat hoeing, a ridge ten inches wide, may be taken as a standard task, and other kinds of hoeing in proportion. Thus if thinning in cotton is superadded forty-five hundred yards is enough; if only bunched grass is to be chopped towards the close of the cultivation, nine thousand yards or even more may be done. An unusual grassiness of the crop reduces these estimates. In mule work fourteen miles per day in the plough and sixteen miles in the wagon, (half loaded and half unloaded) is fair average work. In gutting rails from one hundred to one hundred and fifty per day, according to size of rail and character of timber. In ditching in ordinary soils ten cubic yards of earth removed. This work is rarely well done by negroes in this section. Itinerant Irish ditchers are usually employed and these will

seldom contract by the cubic yard. They prefer the running rod as a mode of measurement, but the reasonableness of their charges may be tested by reducing the proposed work to cubic yards of excavation. Cotton picking is best paid for by the pound, and the planter should always make and keep accurate memoranda of the time taken to accomplish all work which can not be tasked, so as to have the means of testing subsequent performances. Indeed he can not safely omit any and every mode by which he may become an accurate judge of all kinds of labor to be performed. Unreasonable exactions from the laborer is as fatal to good management as failure to obtain a fair day's work for a fair day's wages. Forethought, method, patience, firmness, tact—in short what is known as executive ability, is eminently required in this branch of the planter's business; but with a fair share of it, the experience of some seven years has shown that the labor of the freed negro is, upon the whole, neither unreliable or unprofitable. When the supply approximates the demand, so that selection becomes possible, negro labor is probably as docile as any other agricultural labor of which we have an account, and for the special work of the cotton plantation it is undoubtedly the best. The South has pressing need for a white immigrant population, but its sphere of usefulness will not be found in gangs of agricultural laborers.

In connection with labor one other question presents itself. What amount of it can be most advantageously employed upon one plantation. Before emancipation the opinion of the best planters concurred in fixing this at twenty full hands. That number was thought sufficient to claim all the attention of one overseer, to be better for the health and comfort of the laborers than a larger number, and with the proper proportion of work animals the force was ample to make the plantation independent of assistance in its usual operations. These reasons hold now with greater force, and it is doubted whether twenty full hands upon one place is not a maximum which should not be exceeded with free laborers. The proportion of hands to the mule is two and a half. Thus for twenty hands eight mules are required, and mules are worked in teams of two, four and six. So in reducing the number of hands employed, it should be done by five at a time. The plantation should work five, ten, fifteen or twenty hands. As the mule, however, is a more constant element in plantation calculations than the laborer, the usual plan is to fix upon the number of these you are going to work, and then secure the needed number of negroes upon the place which, in your experience, will give two and a half full hands to the mule for constant duty. With less than fifteen hands and a six mule place, the services of a competent overseer can not be afforded. Of course as many plantations so organized may be worked as the capital of the planter and his ability to supervise may permit. If he works less than fifteen hands, he should himself discharge the duties of the overseer, and limit his enterprize to the single place.

LOW MIDDLING.

The Lawrence, Kansas, *Journal* says, corn fed to cattle and hogs, will realize to the farmer five dollars profit per acre. Corn hauled to town and sold, will not pay the farmer six cents a day for his labor. Money is going to be plentier because there are still plenty of cattle and hogs in the country.

The Condition of American Agriculture.

A long and somewhat detailed exposition of the "Condition of American Agriculture," in the monthly report of the Department of Agriculture for March, embodies many instructive facts, and suggests much in the way of needed improvements in practical farming. It shows that while there is progress in ideas, and to a limited extent in actual working, there is at the same time, in the main, a sad lack of anything like a rational, not to say scientific, system in the cultivation of the soil. Farming is in general a mere matter of unthinking toil—muscle untaught by mind—all manual or machine labor, and no *brain-work*. This is the dark side of the picture. The bright side—and there is one—shows us, that there is a class of farmers, not so large as we could wish, but rapidly increasing, who have begun to read and to think, and, at the same time, to put the results of their reading and thinking into practice on the soil. Agricultural papers and books are having an increased circulation, and the good they are doing is becoming, year by year, more obvious.

A SYSTEMATIC ROTATION IN CROPS.

In the Middle States, a systematic rotation of crops is more generally practiced than anywhere else; but even there it is far from universal, and even "where farming is intelligent and systematic, there still exists a class of so-called farmers, whose sole method is found in a merciless succession of the same crops, generally grain or root crops, with shallow cultivation and little or no fertilization. This shiftless husbandry, however, is undermining its own existence, and promises shortly to relieve the country of its presence. As the soil finally refuses to answer this destructive system with a bare subsistence, the farmer sells out in order to 'go West,' and diffuse the blessings of his exhaustive system over a quarter-section of frontier virgin soil."

Of the South Atlantic States, Virginia shows the most general tendency to systematic crop rotation. In North Carolina, South Carolina, Georgia, and in all the Gulf States, rotation is the rare exception.

PERMANENT IMPROVEMENT OF THE SOIL.

In the matter of soil improvement, the Middle States show the greatest advance, farming being there a more exclusive pursuit than in New England, and land not so cheap as in the South and West. "The towns and cities," the Report says, "supply a very large fund for the supply of market-gardeners and truck farmers, but the chief resources of the general farmer is in the accumulations of his own farm. Stock-raising and sheep-husbandry add very considerably to the amount of organic matter returned to the soil for plant food. In New Jersey extensive deposits of marl are found in accessible positions, and are freely used as fertilizers. Lime, also, is a favorite in counties where it is readily obtainable, especially in those regions of Pennsylvania which are underlaid by extensive coal and limestone strata. Fish manure, sea-weed, and other marine organic matter are largely used near the coast, and night-soil, well composted, is in demand among market-

gardeners. Commercial fertilizers are growing in favor in some counties, while in others their value is seriously questioned. Clovering and green-soiling are, in many counties, the mainstay of recuperative farming."

In the South, the permanent improvement of the soil is beginning to be thought of, and its desirableness appreciated, but the condition of the agricultural population is such, that in practice, fertilization has generally, as a matter of necessity, reference merely to immediate results.

HOME PRODUCTION FOR HOME CONSUMPTION.

"Shall the farmer or planter produce the animals needed in carrying on his farm, the field products for their support, and the meat, bread, butter, cheese, vegetables, and fruit for his own table? Or is it on the whole more profitable for him to concentrate his efforts upon the production of one or two specialties, and from the proceeds of the same sold in market pay others for raising the farm products needed in carrying on his own farm and bringing them to him?" The Report says:

In the New England and Middle States, where mixed husbandry is almost universal, this is hardly a practical question; but in some of the southern and western States it is one in respect to which opposite opinions and practices prevail. So far as opinions are backed by substantial evidence and practices by facts and figures, the returns of our correspondents largely favor the rule of home-production for home-consumption. There are, doubtless, some instances in which circumstances of soil, climate, and market justify a farmer in relying mainly upon other farmers for the farm products needed in carrying on his own farm; but it seems probable that the great majority of those who do so continue a practice to which they have become habituated, not so much from any positive evidence that it is more profitable, as from the fact that they have never tried the opposite policy long enough to fairly test its legitimate results.

A Southern correspondent of the Department, after stating that the principal product of the country is cotton, reports that the producers "consume one-half the proceeds of that for corn, flour and bacon, and the other half for mules, horses, and goods Others are quoted as follows:

They consume all they raise except cotton, and fully one-half do not raise as much as they consume; the few who do are the most prosperous farmers, and about the only ones who keep out of debt." "Nearly all consume the proceeds of their cotton crop in the shape of meat, corn, hay, &c., bought abroad." "All agree that while it may not be profitable to raise other field products than cotton for market, it *is* profitable to make enough for home-consumption." "In the cotton district, those who use fertilizers and plant grain enough for home-consumption are making money most rapidly." "Experience has proved that only those farmers are making any clear profit who make their own supplies and have their cotton money clear." "Our farmers consume all except cotton, and that is consumed by three-fourths of them in the way of procuring supplies of bacon and corn." "The great majority see no profit in any crop but cotton, which is yet considered 'king;' but the very few progressive men here consider diversified husbandry best for us—to raise home supplies, good cotton crops on small areas by high manuring and good tillage, sheep on a gradually increasing scale, yearly putting more land into clover, grass, &c." "It is easy to demonstrate that the 'all-cotton' system practiced by most of our farmers is ruinous, and that the diversified system is the only profitable one."

THE LABOR PROBLEM—PRICES OF FARM LABOR.

In December, 1869, the average wages for farm laborers in the United States was $25.13, proportioned as follows:

Eastern States	$32 03
Middle States	29 15
Western States	27 01
Southern States	16 81
California	46 38

Scarcity is general, though perhaps more frequently and strongly urged in the Eastern and Middle States. In the South scarcity comes not alone from paucity of numbers in proportion to work to be done, but from indisposition to do it. There is a strong feeling among farmers against legislation limiting the hours of a day's labor as impracticable and injurious to employer and employed. In the more populous States a native farm-laborer is a rarity.

THE TRANSPORTATION QUESTION.

On this point the Report says that the excitement relative to high and discriminating rates for railway transportation is intense throughout the West, and "the feeling is generally one of indignation at the manifest injustice, and a calm determination to use legal and legislative means to remedy the above. The farmers appear to be thoroughly aroused, and they have the power, rightly used, of enforcing their demands. It is important for their own good and the welfare of the country that they stand firmly for all that is right and submit to nothing that is wrong."

The Extreme South: Biscayne Bay and its Surroundings.

Much has been written and spoken about "Tropical and semi-tropical" Florida, and many localities thus designated have produced crops of ice more frequently than fruits of even semi-tropical classification, oranges excepted. There are instances, it is true, where by great care and attention delicate fruits have been grown in places thus visited by killing frost, and the fact is heralded forth as evidence of what may be accomplished in that line. The attempt, however, to grow such for market results in disappointment and loss, because the necessity for protecting them involves an expense which forbids all competition with more favored regions. Tropical fruits cannot afford to pay hot-house duty, if grown for the general market. Their culture under the conditions of suitable soil, climate, and facilities for transportation, is very profitable, requiring less capital and less labor than Northern market gardening, and is more reliable in the annual returns. Besides, it is an occupation which the most delicate in constitution may pursue, not only with pleasure, but with decided physical advantage. Oblivious of winter's colds, they can inhale in December, as well as in June, the fragrant breath of perennial flowers, and luxuriate in the uninterrupted harvest of fruits, several of which have no particular season for maturing.

In consequence of the disastrous effects of the cold the past winter, and early

spring in the upper latitudes, attention is being directed to places further south. Many inquiries are made about this region of country, chiefly from the fact, doubtless, that it is the extreme southern point practical for horticulture. The Keys or Islands south of Biscayne Bay are too low, and too much exposed to storms for growing marketable fruits, except pine-apples and cocoanuts. Few of them are inhabited at all. An occasional hut belonging to some sponger or wrecker is seen in passing. Key Largo is, perhaps, the only one that can claim any cultivated grounds, but it is entitled to the credit of containing the largest field of pine-apples in Florida. Mr. Baker, the owner, is said to gather 100,000 apples a year. Making the cultivation of this fruit a specialty, he is doing a thriving business.

For the benefit of such inquirers as may be reached through the columns of the RURAL CAROLINIAN—and every Southern fruit raiser should be thus reached—I propose in this and succeeding numbers, to present such items of practical information as are deemed most interesting, and which parties at a distance are most anxious to obtain.

The writer has less than six months experience of his own to speak from, hence the statements of others, to some extent, must be used. These, however, will be subjected to rigid inspection before appearing in print, so that the reader may be assured that every effort will be made to exhibit things as they are, not as they might have been with the surroundings of a different latitude, carefully excluding such fancy achievements as may be classed with the production of "grapes from thorns, or figs from thistles."

Cape Florida Lighthouse, which is situated on Key Biscayne, some eight miles from the main, is put down as being in 25° 30′ N. latitude, and 80° W. longitude. It is about equi-distant from the two extremities of Biscayne Bay. The key is six or eight miles long, running north and south, and about half a mile wide. Between it and another small key northward is Bear's Cut, one of the entrances to the Bay, and between the second key and the narrow strip of main land, separating the ocean from the Bay, Boco Ratones, (Rat mouth,) another entrance. The southern end of Key Biscayne is called Cape Florida, near which is the principal ship channel, giving from nine to ten feet of water on the bar at ordinary flood tide, and eight feet may be carried to within thirty feet of the main shore. South of the ship channel is Elliott's Key, which in common with those to the northward forms a link in the long chain, serving to keep out whatever rough waters of old ocean may have scaled the coral barricade still further seaward.

Biscayne Bay is about 35 miles long, from three to ten miles wide, and from two to 12 feet deep. The water is quite clear, and when undisturbed by winds, shows the bottom plainly, even at the greatest depth. Besides the Miami, there are five or six small rivers or creeks flowing from the everglades into the bay, and less than ten miles in length. These streams in most cases have rapid currents, sometimes running over rock beds and falling a few feet, at others walled in by rocks rising perpendicularly from the water to the height of 10 or 12 feet. Across Arch Creek, about one mile from the bay, is a natural bridge of solid rock, thirty feet wide and about the same in length. The top of this rock is covered to the depth of a foot or so with earth, with bushes growing thereon. The under surface

is handsomely arched, and rises two to three feet above the level of the creek. At this point, and indeed pretty much all the way down to the bay, the water is 12 or more feet deep; and for some distance both above and below, the rock bluff is not less than ten feet high, imparting, with the handsomely arched bridge, a romantic and mountainous feature to the landscape. Where these streams flow through hammock lands, the growth bordering them is very imposing, From the majestic live oak to the humbler cocoa-plum which fringes the water, and offers its pleasant fruit to the boatman the year round, all are liveried in perpetual green; while the bright crimson flowers of countless air-plants clinging along the trunks and branches of the different trees, suggest a whole forest in bloom.

The streams are well supplied with fresh-water fish, turtle, and alligators, and sometimes denizens of the sea are found a mile or two from home. Of salt-water fish there is quite a variety, and some of them of huge proportions. What is here called "tarpon" is a very brilliant fish, often measuring from four to six feet long, and weighing from 100 to 200 pounds and upwards. They are usually *grained*, which is easily done while feeding, as they generally select shallow water for that purpose. Our "boys" capturing two in the morning, we were forced, for lack of consumers, to bury at least 150 pounds of an excellent substitute for cod-fish. The jew is another large fish, exceeding the tarpon in size, but without its symmetrical shape and lustrous scales. It is also esteemed a good fish for the table. The king-fish is caught outside and near the reef by trolling, and is a popular fish in the Key West markets. The Spanish mackerel is also an "*outsider*," inhabiting deep waters, but is highly relished *inside*, with or without sauce. The pompeno is universally conceded to be very superior; they go in schools, and are best taken with nets. Then there is the angel-fish, the sailor's choice, grouper, mullet, snaffer, bass, trout, sheepshead, &c., all good in their season, and are so pronounced by most people, whether served on Friday or Saturday.

There is a shell-fish found in these waters, described as being as large as a lobster, and said to be more delicately flavored. It is here called "salt-water cray-fish," bearing a strong resemblance in shape to its fresh-water congener, but larger and colored like the lobster. The bay oysters (what I have seen) are small, and about on a par with those of St. Augustine—fit only for seed. Channel crabs are plentiful and easily caught. Some writers also give us shrimp. They are however unknown to our fishermen, possibly because they are too small and insignificant to attract a hungry man's notice.

As I shall have much more to say concerning this interesting and desirable section of country, it is perhaps fortunate for you, Mr. Editor, and your readers that the nature of my engagements will not admit of long articles.

J. N. WHITNER.

We see it stated that Philadelphia is sending hay-forks, dung-forks, and pitch-forks to Sheffield—which seems at first "very like" sending coals to Newcastle—while the Ames shovels from Massachusetts supply England and the rest of the world. Saws are also shipped from Philadelphia to England.

Planting on the Wateree—Upland Rice Culture.*

Mr. President, Ladies and Gentlemen—Allow me while thanking you for the honor conferred upon me in your invitation to address you, to say that I feel great diffidence in speaking on agricultural subjects to persons of so much greater experience and knowledge than myself. I have not, like yourselves, the advantage of having grown up in an agricultural community, and cannot refer to years of experience, nor give you the benefit of careful scientific study bearing upon planting, but should like, if it were possible, to say, in a plain, straightforward way, something for the encouragement of those who, like myself, may come from other parts of the country to make their homes in South Carolina.

Four years since I came among you with no knowledge of planting, and although I have been obliged to learn from that hard teacher, experience, have each year increased my crops and my profits, and in spite of many drawbacks, feel more than ever inclined to continue.

In coming to South Carolina, I purchased a rice and cotton plantation on the Wateree River, and it is of this river bottom and the adjacent lands that I am requested to speak to you; for the Wateree is but one of the many rivers running through our State and the whole South which are equally available.

There is on this river a large body of alluvial land, some four miles in width, and extending from the Town of Camden to the mouth of the river, and much of it is unimproved. These lands are easily cleared, and the process of decay so rapid that they are soon free of stumps. I cleared some of this land which had not many trees of large growth, but on that account was a worse thicket of cane briers, &c., at an expense of five dollars an acre.

If the streams running through this section were properly managed, a great deal of it could be planted in rice. The putting down of trunks, usually so large an item in the preparation of rice lands, is not in this region attended with great cost or difficulty. It is not necessary to have them as large as on the coast, and as we are not forced to contend with the tides, they can be put down with less labor, and made secure before the water reaches them. Earthwork costs not more than seven cents per cubic yard, and in working on my levee, laborers moved from fifteen to twenty cubic yards a day. The soil is so mellow that with mules and scoops the work could be done still more cheaply. In the case of the Wateree much labor and expense in the building of banks would be saved by straightening the course of the river, which from surveys I myself made last summer, I am convinced could be done at comparatively small cost. I do not know how far this is the case with other rivers. Rice planting in this upper country possesses some advantages, which I think worthy of attention. In the first place, the drainage is from eight to ten feet, except in time of freshets, which are not of long duration, and thus the planter is enabled to use heavy two-horse ploughs in preparing the land.

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* An Essay read before the Spring Meeting of the State Agricultural and Mechanical Society of South Carolina, at Charleston, April 29th, 1873, by George T. Wicks, Esq., of Richland.

Secondly. When the water rises in the latter part of winter, by opening floodgates and trunks farthest down the river, it is permitted to back in, and thus the levees protected and the land enriched by a deposit of river mud.

Thirdly. Ten days after drawing off the water, the land becomes sufficiently dry for putting in mules and harrows preparatory to planting the crop, which can be done entirely by machinery.

Fourthly. It is not necessary to wait for tides, as the water being in reserve the crop can be flowed at convenience.

Fifthly. After taking off the stretch flow and working the crop, the harvest flow can be put on and remain unchanged until time to cut the crop, for a stream of fresh water sufficient to keep the water on the rice pure is constantly running in.

Sixthly. Ten days after taking off the harvest flow, the land is sufficiently dry to admit of a machine going in to cut the crop, and it seems to me exceedingly desirable that such a machine should be found.

Seventhly. Teams can go into the squares and draw the rice to the thresher. Thus you will see, that from the planting of the crop to the gathering of it, much which on the coast must be done by hand, can in the uplands be done by machinery. I have planted rice but two years. In the first of these I made an average of forty-two bushels to the acre. Of the average of the second year I cannot speak, because the crop wasted excessively in the field and yard, owing to delay in getting up the machinery to prepare it for market. Besides being good for rice, the bottom lands are most admirable for corn. You can plant them late, (as late as the middle of June if you please,) when your mules have less to do than earlier in the season, and still make a crop of from forty to sixty bushels per acre. I have never myself succeeded in making a crop of cotton on these lands, although I have experimented both with and without fertilizers. The plant grows very tall, bears many bolls, but does not mature. From all I can learn, the large crops sometimes made are very exceptional. However, joining these bottoms is a belt of land, of sand and loam, most excellent for cotton. Last year, on eighty-one acres of this I made seventy bales, weighing from four hundred to five hundred pounds, the manures being chiefly vegetable matter, with about one hundred and fifty pounds of commercial fertilizers to the acre. Many persons plant these lands in corn; but as they never produce over twenty bushels per acre, and rarely more than fifteen, even when fertilized, I think it wiser to buy corn than to raise it on them. Rice-straw from the bottom lands makes an excellent fertilizer when you plant them in cotton.

Still further from the river are the sand-hills, where you can reside the entire year, in a most delightful climate, and within easy riding distance of your rice and cotton fields. On these sand-hills I last year tried an experiment, of which allow me to speak. I took three and one-half acres, on which were growing tufts of broom sedge. After breaking it up and hauling on to it some of the rakings from under the pine trees, and adding about seventy-five pounds of fertilizers per acre, I gathered a four hundred weight bale of cotton from each acre, although the season was, with us, dry. This was a small experiment, and I give it for what it is worth, but it would seem to indicate that the "bald sand-hills" are better worth planting than has been generally supposed.

I have thus briefly mentioned the chief features of planting in the part of the State from which I came. If you desire any further information, I shall be most happy to answer questions to the best of my ability.

But before closing, allow me to ask if it is not possible, by concerted action, to do something towards importing labor. I do not mean to supersede the negro, but to supply deficiencies. It seems to me right and desirable to do all in our power to improve the labor around us; but it is not sufficient for our needs. With abundance of labor and her natural advantages, properly improved, the productiveness of our State will be surpassed by none.

Nature's Rotation in Vegetable Production.

It has long been known to all well informed agriculturists that it is advantageous to frequently change the crops grown on any particular field. The principal of rotation is now, we suppose, universally admitted by thinking farmers, though, from various causes, far from being universally practiced. The benefits of rotation have been more than once pointed out in these pages and several practical systems laid down. It is not our purpose now to recur to these points, but to illustrate the general principal by reference to some curious facts in the natural history of plants.

In 1825, Dureau de la Malle called the attention of scientific men to the phenomenon of natural rotation. From long observation of what takes place in woods and pasture-lands, he established the fact that an alternation of growth, as he called it occurs as a natural phenomenon, the grasses getting the upper hand at one time and the legumes at another; so that in the course of thirty years, he was a witness of five or six such alternations.

In woodlands, as is well known, a similar phenomenon is observable. The writer just referred to relates how, after the felling of the timber in forrests of a particular district of France, broom, foxglove, heaths, birch-trees, and aspens sprang up, replacing the oaks, the beach, and the ash, felled by the woodman. After thirty years the birch and poplars were felled in their turn. Still very few of the original possessors of the soil, the oaks, etc., made their appearance; the ground was still occupied with young birch and poplar. It is not till after the third repetition of the coppicing—after an interval of ninety years—that the oaks and beech reconquer their original position. They retain it for a time, and then the struggle begins again.

Antiquarian researches have proved also that in the natural state of things, and without any violent change in external conditions, the nature of forests becomes altered. The Hercynian forests, of which Cæsar speaks, and which then consisted of deciduous-leaved trees, are now made up principally of conifers. A forest which, in the middle ages, was of beech, is now stocked with oak, and *vice versa.* Again, we have the evidence afforded by submerged forests and peat-bogs, according to which certain plants, now extinct in particular localities, once flourished there. We are not alluding to plants that may have required a different climate from what they now experience, but to such cases as the silver fir, the Scotch fir,

Pinus Mughus, etc., which are found in this partially-fossilized condition in spots where there is apparently nothing to prevent them from growing now, where, in fact, they do grow well when planted.

Forresters in all parts of the world are well aware of these facts, and botanists watch with interest the appearance of a different vegetation whenever some accident has interfered with previously existing conditions.

When woods are cut down, when soil from a depth is laid on the surface, when extensive fires occur, when lakes are drained; in fact, when any sudden alteration takes place in external circumstances, then we may expect to find a corresponding change, in the vegetation. One set of plants profits by the change, another suffers. It may be asked, "Where do the new arrivals come from?" Sometimes, no doubt, the seeds are wafted from a distance, and, finding a suitable abiding-place, germinate. This is, perhaps, more especially the case with the spores of fungi, whose extreme minuteness favors their dispersion in this way. But it often happens that the facts of the case will not admit of such an interpretation, and then we can only fall back on the supposition that the seeds or bulbs existed in the soil, but under circumstances not favorable to their development.*

The soil in this way is looked upon by DeCondolle and Darwin as a vast magazine of seeds, bulbs and roots capable of retaining their vitality for a more or less prolonged period according to circumstances, and ready to avail themselves of any change that may be beneficial to them.

A Planter's Experience in Manuring Corn.

It is said that "cotton is king," and to a great extent it seems to be true, at least with a good many farmers, because, as they say, their land is too poor for corn. Well I will admit that a great many of us have poor land. I know I have, and I might say that it is too poor for corn, and tell the truth; but allow me right here to give a bit of my experience as relates to that thing, for the encouragement of my brother farmers, especially those of the young class who have chosen planting for an occupation.

I will ask is there no remedy in such a case? Will not the same remedy apply to corn as cotton? They say not, meaning, I suppose, that an acre or any amount of such land well manured will produce in cotton more dollars than the same amount if planted in corn. Admit it for the sake of argument, but I doubt it very seriously, when all things are properly considered.

I ask again, then is there no remedy? There is, and I speak in the positive, for I know it by actual observation and labor of my own hands under the direction and supervision of myself. Now I will endeavor to tell what it is and how managed, time, &c.

One argument used also against corn I forgot to mention and answer, and that is, corn is so exhaustive a crop that the quantity of manure answering for cotton will

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*Maxwell T. Masters, F. R. S., in Popular Science Review.

not suffice to mature the corn. Well, admit that too, but as in the other case I doubt it, believing that it depends upon something else; let that be, however, as it may, there is a remedy.

In eighteen hundred and sixty-six, I had planted near by the farm lots, nine acres of poor land, in corn, and at the time of planting, there was put about the usual quantity of manure per acre, in the furrow with the corn. There was a good stand, and as soon it was old enough to plough and hoe, that was done, and the ground left in fine order and corn looking tolerably well. This idea of the corn exhausting the manure before maturity and firing at earing time, as it does mostly on poor land, struck me with force then and caused me to endeavor to find a remedy. So the very day that I finished ploughing and hoeing the nine acres, I called up Dick, a colored freedman, working for me, and told him what I wanted done with a lot of cows, six in number, that were penned at night near by this field and adjoining the kitchen yard, to begin the next day, attended promptly by himself, saying to him at the time what it was for, that I wanted these cows driven up early each morning and moved gently over and around the pen, having a shelter where the droppings were to be deposited, and a soft place made in the pen also which was kept filled with light trash of some kind; the cows driven to that place, also which was to catch the urine, and when the time came to plough the corn second time, I wanted it carried to the field and put a handful on each side of the stalk, in bottom of the first furrows, as far as it would go; saying to him at that time, I supposed he would get enough manure to go over, in that way, two or three acres, if he would save it carefully, which he did. During this time of saving and making this manure, which was just nineteen days, there was something thrown on the pile in the way of trash, such as sweepings from the yard, and occasionally some ash from the stove and fire place of the chimneys, and a lot of good soil from the fence corners around, and coal dust, which was used in quantity just sufficient to act as a dryer to the moist manure, making it of a consistency to handle well, then put in barrels and bags; then the plough was started running one furrow on each side of the corn, hands following and depositing a handful on each side, as before stated, then another plough came along and covered this manure well with its furrow, and in this way continued until the whole nine acres was completed. The time required each morning for gathering up the manure and getting under shelter, was not more than fifteen or twenty minutes.

As to the result of this experiment, I was as much surprised at the great beneficial effects of this application to the corn at the time and way it was done, as I was at the quantity of land it covered. The stalk did not grow large nor tall, but the ears were large and well filled, and no firing of the blades as usual with corn at maturing time, when there is drought, as there was here that season. The crop was not measured, therefore, I can not say what the yield was, but will simply say it was fine and a great deal better than I expected. One object I have in writing this article is to direct the minds of young farmers to one very important item in farming, and that is making manure in your own stock lots, which has been and still is, much neglected; not that I oppose the use of commercial fertilizers, by any means, but to encourage them, if they have land and stock; say it is poor land,

and they have not money to buy manure they have a remedy at their own control. Just think of it, what I did, (I do not like to speak of what I do) in so short a time; made in less than twenty-one days, manure sufficient to apply to each hill of corn on nine acres. Think of it my young friends and try it yourselves.

PLANTER.

Oglethorpe County, Ga.

Experience with Hybrid Cotton.

In the cotton picking season of 1870, my attention was attracted by the remarkable appearance of a stalk of cotton in a field of long cotton. This stalk had the long joints and large stalk of the long cotton. It was larger and taller than any near it. The bolls were much larger, four and five celled, the seed large, green, and heavily tufted, and the lint exceedingly long, fine and strong. The lint in sample was apparently a No. 1 article of Sea Island cotton.

The cotton from this stalk was picked and carefully kept apart from other cotton until the next Spring, when the seeds were planted in a patch removed from other cotton, to prevent further hybridization, hoping thereby to produce a cotton uniform with that planted. But this expectation was not realized. The result was a wonderful mixture; four well marked varieties, and an indefinite number of sub-varieties. There were, 1st, the pure long cotton, black seed and long, fine fiber; 2d, a cotton nearly identical with that planted; 3d, a specimen that would pass anywhere for common upland cotton; 4th, a variety, with black smooth seed, but very short and coarse lint, having the seed of Sea Island and the lint of upland. Now between these well-marked varieties were intermediate varieties, with but slight differences.

That seed from a single stalk of cotton should contain germs of such variety and such differences, is to me wonderful, but such are the facts.

The practical conclusion reached by me was that hybrid cotton was not a safe investment for planting purposes. The only certainty in the product being such a complicated mixture, that the ingenuity of the most expert dealer in cotton would be severely taxed to classify it.

But is it not possible that any one of these varieties might have been fixed, and caused to produce true to its kind, after many plantings and careful selections?

F. M. McMEEKIN.

The Use of Salt in Agriculture.—Horace Greeley had a very high opinion of salt as a fertilizer, on lands distant from the sea-coast. He said: "I estimate its value at 25 cents per bushel on my place, which is some twenty miles from Long Island Sound and nearly twice as far from the broad ocean. That is to say: I consider ten bushels of salt per acre, applied to my fields one half in each of two successive years, about the best two dollars and a half worth of plant-food that money will buy me. And almost any farmer can obtain refuse salt from importers, manufacturers, tanners, repackers, or grocers and dealers who buy salt meats or fish by the barrel and sell them out by retail, if he will but inquire and be patient.

Horticulture and Rural Adornment.

Horticultural Hints for June.

Gardening in the South is work for all the year round. It is constantly beginning anew and never ending. It has been too generally thought, however, that summer gardening, in our climate, does not pay. This is a mistake, as we have demonstrated in practice, as well as shown on paper. June, however, generally brings hot weather and frequently severe drought, and even the best gardener often meets with some discouragements and failures. "What shall we do?" First, we will tell you what you should not do. Never abandon the garden to crab-grass, weeds and vermin, and do not join the cry "It's no use to try to have a garden in summer." This notion is entirely erroneous, and acting upon it deprives us of many articles which are not only delicate luxuries, but which are also conducive to health. Again, do not waste time and labor on plants which are manifestly unsuited to our climate at this season of the year. Green peas must be dispensed with for a while. It is our own fault, if we have not had an abundance of them for two or three months. Turnips, radishes, lettuce and cabbage, if grown at all will be of poor quality. We must find substitutes. Now let ut see what we may grow in our gardens, even in the hottest and dryest part of the season. Snap beans may be kept in a tolerably productive condition all summer, planting about once in every two weeks. Lima and Sieva or Carolina beans should never fail till frost. Other pole beans will not be needed. In place of both turnips and cabbages, the kohl-rabi, planted between the rows of corn, or some other tall-growing crop, to give partial shade, will do tolerably well for the greater part of the season. Okra and "roasting ears" need never be lacking. Carrots and beets will not fail altogether, on deep well pulverized soil, especially if mulched. Tomatoes will hold out till frost. Squashes, (of varieties which resist the vine-borer,) cashaw pumpkins, cucumbers, melons, and other things, (for we have not space to mention all,) help to fill out the list. Don't tell us that it is useless to try to have a summer garden.

———It is often necessary to repeat many times an important lesson, in order to impress it upon the mind, and we now reiterate that the ground for a summer garden must have *a deep, thoroughly broken up soil.* Two feet in depth is not too much, and nothing less than eighteen inches should be considered admissible. In the second place, no crude unfermented manures must be used. Good composts made up largely of well rotted vegetable matter, may be applied in any quantity that may be required, adding, or applying separately, wood-ashes, plaster and salt. These help the soil both directly, as manures, and indirectly as absorbents of moisture, and the more vegetable matter you have incorporated with your soil, if thoroughly decayed, the greater will be its capacity to absorb and retain water.

———Another consideration, and a most important one, is *shade for the ground.* This is best obtained by *mulching*—that is by covering the soil between the rows and closely around the plants with hay, straw, half-rotted leaves, pine-straw, or any convenient vegetable trash. This mulch should be several inches in thickness, and will not only prevent the rapid evaporation of moisture and the reflected heat from the ground, but also the close packing and baking of the soil, from the beating rains and the hot sunshine which generally follows them. This mulching should be done while the soil is still moist. With heavy mulching the Irish potato crop may be saved, and can be dug as wanted, far into the summer, and the earliest planted tomatoes, often kept in bearing nearly the whole season. It may be applied with profit to nearly all the crops, but especially to those most liable to be injured by heat and drought.

———Cabbages, even if a sowing was made last month for the fall crop, may be sown again now, and may give better plants; but the ground must be shaded and the bed frequently watered till the plants have come up and made considerable growth; or they may be sown in boxes, to be kept in a shady place, or in a frame covered by an oiled cloth sash. Sow kohl rabi in the same way. Cauliflowers and broccoli should have been sown last month, but if neglected try them now, shading and watering. Beets and carrots may still be tried. If you can get a stand, they will come in well in the fall. Continue to plant snap beans once in ten days, if you desire a succession. The tender pods make good pickles. Lima and Sieva beans may still be planted. Green corn is desired during the whole season. Flint corn is better to plant now than Sugar corn. Okra may be planted for a late crop.

———Tomatoes should be tied up to stakes or trellises, and the ground around them well mulched. Seed should be sown for a late crop. Onions will be fit to pull from the middle to the last of the month. Take them up in a dry day, and spread them on a floor in a dry, airy place. Save Irish potatoes by spreading them in a cool, dark place, as seed for a fall crop. Carefully work your strawberry beds to kill all weeds, and then mulch the ground. If you desire new plants, leave a space between the rows, very lightly mulched, in which the runners may take root.

———The spring flowering bulbs—hyacinth, tulip, etc., should now either be taken up and put away in paper bags, or packed in dry sand, (the latter is best, unless you desire to keep the different varieties separate and labelled with their names;) or the ground should be heavily mulched, when they may remain till September or October, to be then taken up and replanted, after removing the offsets. Sow in a partially shaded spot, balsams, nasturtiums, zinnias and salvias, for late blooming.

———This is the season for layering roses, broad leaved evergreens and deciduous flowering shrubs. The way to do this has been described in previous numbers. See particularly Vol. I, p. 773, and Vol. III, p. 519. Deciduous shrubs which have ceased to blossom should be pruned, removing the wood which has produced the flowers, to increase the vigor of the new growth.

Nunan's Prolific Strawberry.

Nunan's Prolific Strawberry is understood to be a Charleston seedling, originated by the gentleman whose name it bears; and, notwithstanding its great merits as a market berry, it is scarcely known beyond this immediate vicinity. The plant is an exceedingly strong grower, with abundant foliage, and withstands the heat and drought of our trying climate admirably. The flower stem is of good length, holding the berries well up from the ground; the berries are remarkably handsome, large—sometimes very large—roundish conical, perfectly regular, smooth and even; color, pale red; flesh, pinkish white, tolerably firm; flavor, a brisk acid as the berries are generally gathered, but sweeter when fully ripe; very prolific here, when grown in stools on sandy soils. It closely resembles Burr's New Pine, but we have not the latter at hand with which to make an accurate comparison.

On our grounds, which are clayey, Nunan's Prolific has not proved equal to its reputation, either in size of berry or in bearing qualities; but as we have seen it elsewhere, it certainly has no superior in these respects, as it certainly has not in beauty of form. In quality, it will compare favorably, when fully ripe, with Wilson's Albany, but cannot claim the high, rich flavors of Triomph de Grand, Seth Boyden, Lennig's White, President Wilder and others—such, at least is our estimate of it; but tastes differ.

Some "Black Beasts" and their Habits.

"Black beast" or "bear," is the English for a French expression signifying one who is always across the current, or always in the way, or something of that kind—a sort of myth. But the world is full of black beasts.

The beast of society is the one who, upon a day's acquaintance,

> "Calls you Tom or Jack,
> And proves by slaps upon your back."

The beast of the farm-house is he who kicks a timid colt to *gentle* him, or throws rocks at a dog to make him follow. The beast of the bee-hive is the one who slaps at the first bee which comes to smell of him, thereby bringing down on himself the whole swarm. The beast of the woods is not the bear, but the one who levels a noble forest to make a second series of *old fields;* or, which is the same thing, cuts down the tree to gather its nuts. No doubt the plough loom and anvil, all swarm with black beasts. They are always coming on to the stage of life, and sooner or later, should change color; for the necessary, information with continual accumulations is constantly furnished year by year, by the press, for that object alone.

Reader have I lured you by the bear story to what I was going to write? A domestic recipe, and which, if it had been so headed, you would have skipped as hackneyed.

Are Mrs. Squash and Miss Rose "black beasts?" Yes, in some respects they are. Let us see. When Miss Rose wishes to transplant, she pulls up her lily by the roots and shakes off the soil—"*No I don't.*" Well, what don't fall off remains; or you, take the trowel and stab at it—"*I don't, I gently lift it out*"—exactly, and then you tell Sambo to give it a good bed of manure from the stable, which you kindly set it in, and—*what!*—it dies. Miss Rosa, you are the black beast in the flower Garden.

How to Transplant Vegetables, or any very Sensitive Plants or Shrubs.

Listen: Take two tubes (say tin) of a size and length in proportion to the work to be done, the one fitting loosely inside the other. Put the smaller over the head of the plant. Now saw the outer case or cylinder down well below its roots. Dig on one side until you can put your hand under it, and you may travel to Texas with it if you wish. The inside tube is to push the plant out of the outside one, when well down in its place. If necessary, sift fine rich soil (not manure) around it and it will not even wilt.

Years ago when I was, perhaps, more careless than I am now, I might have saved many days and dollars if I had known this. Now how many will say "thank you, is this the only little kernel in the bushel of chaff." It is all—from one kernel come thousands. The chaff was to catch readers.

M. L. BALDWIN.

Orangeburg, April 12, 1873.

Packing Grapes.

I wish to offer a few suggestions to the grape growers in reference to packing grapes for shipping to market. The manner of packing has much to do with the condition in which they arrive in market, and the condition has much to do with the price obtained.

In the first place grapes should never be gathered when wet with dew or rain. The best method that I have tried for gathering grapes is to take a sharp pair of shears (pruning shears answer well) or a sharp knife with hooked blade; take hold of the bunch with one hand and cut the stem of the grapes with the knife or shears held in the other hand, and take off all green and decayed berries, then lay it carefully in a basket, then proceed to the next; when the basket is full, carry it to the place of packing, which should be under roof; the next operation is to pack them in boxes, which should be both light and strong; twelve by eighteen inches, and four or five inches deep is a convenient size and will hold from sixteen to twenty pounds if properly packed; to do this right it will take some experience.

I would recommend that the box be set on a table of convenient height, having the back end of the box elevated three or four inches by placing something under it; then commence at the end next to you and lay the bunches in carefully, pressing them together gently, but not hard enough to break the berries. When the bottom of the box is covered one layer deep, commence at the front again, put in a second layer, placing the larger bunches in the low places and the smaller bunches on the high places; thus keeping them as level as possible, proceed in this manner until the box is full, being careful to have the box as level as possible when done. Cutting bunches to fill up cavities is not a good practice, as large bunches sell best.

When the box is full set it aside and proceed to fill another and so on until all are full. The boxes thus filled should be allowed to stand until the stems of the grapes are wilted and become pliable, which will take from six to twenty-four hours; then take a board and cover the box, placing one hand under the box and the other on the cover; then set the box on end holding the cover securely in its place with one hand, then shake or jostle the grapes till they settle compactly together, which is easily accomplished after the stems are wilted; this will cause a cavity at the upper end of the box, which should be carefully filled with grapes that have had stems wilted in order that they may pack closely.

Great care should be taken to avoid rubbing the bloom off the grapes, as it injures their appearance, and it is thought they will not keep so well. Care should be taken to hide the stems of the last layer and have the berries look even or level on the top. Grapes should not be allowed to stand in the sunshine after they are gathered. Grapes packed according to the above directions can be transported a long distance without injury.

E. P. BOTHWELL, *in the Vinton Co. (Ohio) Record.*

Duchesse d'Angouleme Pear.

Next to the Bartlett, this is, perhaps, the most generally known and popular market pear we have, and though not of quite so fine a quality as some other varieties, it well deserves its high position. It is very large, obtuse, pyriform or sometimes oblong or ovate in shape and greenish yellow in color, often with some russet; flesh, yellowish white, melting, buttery and juicy; quality, generally very good, when well grown; but poor or worthless when small. [*See Frontispiece.*]

Seasonable Orchard and Garden Notes.

Strawberries in Our Garden.

Notwithstanding the severe drought in April, after the fruit had commenced ripening, which injured the crop considerably, we have had, and shall no doubt continue to have for several weeks longer, an abundant supply of strawberries. The first ripe berries were gathered from a few plants of Nicanor, which we have permitted to grow in a corner, purposing hereafter to make further experiments with them in a more favorable situation. Previous trials have not resulted favorably. The berries are numerous, but small, and, growing close to the ground, ripen badly. Longworth's Prolific and Nunan's Prolific ripened about the same time, and gave us the first picking in quantity for the table. For our own use we decidedly prefer the former. Wilson's Albany comes in a few days later, and is, with us, more prolific than either of the others named, but we do not like it. Triomph de Gand is still one of our favorites, its only fault being that it sometimes fails to withstand unharmed the heat and drought of summer. In point of flavor and excellence for the table, Lennig's White and Seth Boyden head the list, and the latter is also large, and, so far as our brief experience with it goes, a good bearer. Charles Downing, President Wilder, Kentucky, Eliza, and several other varieties are on trial, but we are not yet prepared to speak of them further.

Single and Double Flowers.

In reply to some queries of ours in the RURAL CAROLINIAN, Mr. Meehan, of the *Gardener's Monthly*, some time ago expressed the opinion that "double flowers are grades towards masculinity, and that whether a seed germ becomes of one sex or the other depends on the amount of nutrition it is able to assimilate in a very early stage of life. The lowest power of assimilation produces the double flower. In one capsule are many seed germs. Some of these will not have the life principle so thoroughly incorporated in them as the others through a defective supply of a certain kind of nutrition, and will yield double flowers sooner than others. The reason is that on the first formation of flowers, the plant is still devoting much of its nutrition to plant growth. After that is satisfied, it gives its whole attention to perfecting seed." This seems reasonable and may explain a class of the phenomena referred to by us, but how does it happen that seeds from the same package, sown in different seasons, or under different conditions of soil and situation, will (as has occurred in our own experience and that of others) produce in one case nearly all double flowers, and in another nearly all single ones?

The Best Plants for Hanging Baskets.

A contributor to the London *Garden* says that plants with slender branches which naturally hang down, are most suitable for hanging baskets. "Mother of Thousands"—the "Wandering Jew" with its pretty marked leaves—the Lobelias, and some of the trailing Campanulas or Bell flowers—the well-named "Rat-tailed Cactus," and the so-called "Ice plants," are all more at home when suspended than when grown in any other position, unless it may be when placed on brackets at

each side of the window, where they have a very charming appearance. The same writer suggests that the suspended basket or flower-pot should be supported by a piece of cord passed through a small pulley, by which means it will be easily lowered down for the purpose of watering.

Fancy Prices for Plants.

At a recent sale of rare plants by Messrs. Backhouse, of York, England, the *Country Gentleman* says: A mass of the *Oncidium tigrinum*, consisting of about thirty bulbs, sold for $150. Smaller plants or masses brought $15 to $60. A strong plant of *Oncidium macranthum* was sold for $45, and other plants, all of the same species, from $17 to $37. Many other plants, mostly rare Orchids, brought prices nearly as high. *The Oncidium* is one of the most curious, as well as most beautiful genera of *epiphytons* or air plants.

Natural History Applied to Agriculture.

One of the "Big Bugs."

In a glass case, in my room, devoted to insects, there are at present feeding three or four larvæ of the insect figured below, which is one of our largest and finest beetles, known as the "Gigantic Rhinoceros Beetle."

Dynastes lityus. The larvæ in form, color, and general markings, are almost the same as the white grub, so destructive to pasture lands, with the exception of being about four times as large. Imagine a creamy white grub fully four inches in length, and almost three-quarters in diameter, curled up double, and you have our pets.

They live in old decaying stumps where the wood has turned to mould, and is damp and rich; here they feed until maturity, when each insect forms an oblong cavity, (probably by moving round and round until the damp mould is hard and compact) more than an inch in diameter, and then changes to a pupa which is the same color as or slightly darker, than the larvæ. They have been found in decaying cherry, willow and ash trees, and doubtless occur in other varieties. Though sometimes met with in the Northern States, they are comparatively rare, but in the South are more common, indeed, it may class with the Southern insects. The perfect beetle is of a dingy pale greenish color, and the wing covers are thickly spotted or blotched with brown and black. The males are distinguished by two singular horns rising from the head and thorax, curving towards each other, gives the insect quite a formidable look, and especially when the head is moved up and down, as it gives an appearance of opening and shutting, causing the horns to be mistaken for jaws by unobserving persons. Should any of our readers come across this beetle they will do well to save specimens and forward them to the entomological editor.

The Corn Worm.

This insect is a natural enemy of the Southern planter, and some years is so abundant that scarcely a "roasting ear" can be found that does not give evidence of its ravages, and often one ear serves as a shelter and a home for half a dozen of the full grown worms. Nor does its ravages stop here. In company with that terror to the cotton grower, the cotton army worm, (*Anomis xylinæ,*) and under the alias "Boll-worm," (*Heliothis armigera*) it marches over the cotton fields, playing no unimportant part in the work of reducing the value of that crop. Mr. Riley tells us the same insect in Southern Illinois has been found destroying green tomatoes, boring into the centre of the fruit and causing it to rot. It has also been reported as feeding on string beans, chick peas, and other plants, besides being found devouring the stems of the pretty flowering bulb Gladiolus.

Though so destructive in the South, it is not particularly a Southern insect, as it is quite common in many of the Western States, and some of the Northern ones, and we have read of its having been found in Great Britain, Japan, and Australia.

In the vicinity of Washington it is quite abundant some seasons, and there are two broods of the insect. In Missouri, according to Mr. Riley, there are two broods, and "very early and very late corn fare the worst; moderately late and moderately early varieties usually escaping."

Fig. 1.

The worms first attack the tassel or "silk," but soon find their way to the end of the cob, devouring the terminal kernels, and finally domiciling themselves anywhere under the husk that may suit their convenience, though they are oftener found at the upper end of the ear. Their general habit is to feed on the corn only while it is soft, but it is not the rule, as they have been found in numbers upon fully ripened ears. Even after they have left the corn the injury goes on, for having started the work of destruction, other insects find it a nice retreat, the rain gets in, and with corn worm, other insects, mould, the poor ear is hardly "fit for hogs."

The egg is probably deposited on the tassel by the female moth; and when examined under the magnifyer, is a beautiful object. It is oval in shape, flattened top and bottom, and marked with ridges something like a "nutmeg" melon; in color it is a pale straw. We may mention here that the egg of the cotton caterpillar is *green*, considerable more flattened, and consequently the two eggs are not easily confounded. The worm when fully grown appears as in figure 1; the color varying from green to brown, but the markings and the stripe occurs uniformally in all. When fully matured, the worm descends from the ear to the ground, and there constructs an oval co-coon of silk fibres and earth in which it afterwards changes to a pupa, (see figure 2,) of a bright chestnut brown color, emerging finally as a perfect insect, of which figure 3 is a good representation. The upper wings are of a dirty yellow color; an irregular dark band crosses the wing about an eighth of an inch from the margin, a crescent shaped dark spot occupying the centre, and several dark spots each enclosing a white dot plainly showing in the margin. The

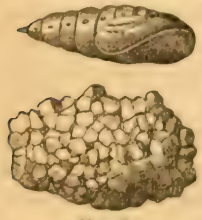


Fig. 2.

hinder wings are somewhat lighter, are veined with black, the margin bordered with the same, a spot the same color as the body of the wing, however, appearing in the border at the hinder part of the wings as seen expanded. As we have said before, the insect is two brooded, and Mr. Glover states that there are three broods in Georgia.

For a time it was a question whether this insect and the boll worm on cotton were one and thesame in sect, but now the question has been settled by various entomologists beyond any doubt. As to the boll worm its natural history is as follows:

The egg is deposited singly upon the involucel about twilight. The worm hatches, and as soon as sufficiently strong, pierces sometimes the outer calyx through the petals into the enclosed flower bud, and sometimes penetrates the boll itself. Sometimes when the young worm is inside the bud, eating the stamens and pistil, both are found distorted and discolored, the latter drawn over to one side. In this case the worm bores through the bottom of the flower into the young boll, before the different parts of the flower fall off, leaving the young boll adhering to the footstalk with the worm safely housed inside. Many buds are pierced in this manner, and if the planter is a careful observer, the brown and withered remains lying all around upon the ground will warn him of the destruction that is secretly going on.

Fig. 3.

We are told that the instinct of the caterpillar teaches it to leave a bud or boll about to fall, and either to seek another, or to remain upon a leaf till it sheds its skin, after which it hunts up another domicil, and, finally, it acquires strength to pierce the nearly matured bolls, which are as good as destroyed as soon as punctured, for rain and wet getting in soon cause decay, which is hastened by the numbers of small insects which find it a safe retreat for their operations.

Prof. Glover says, "whenever a young boll or bud is seen with the involucre or outer calyx spread open, it may be safely concluded that it has been attacked by the worm, and will soon fall to the ground and perish."

In regard to means of prevention, where the insect injures corn, about the only thing that can be done is to go over the field when the corn is in silk, and where the silk appears dry or eaten, to strip down the husk and kill the worms. Every worm killed of the first brood saves, perhaps, many hundreds in the second, and many thousands in third, as it has been ascertained by dissection that one mature female contains 500 eggs.

Various expedients have been resorted to in the South, where the insect was very destructive in the cotton fields, but none appears as successful as the experiment made by Mr. B. A. Sonby, of Columbus, Ga., and quoted by Mr. Glover, in his able report on the cotton insects, as follows:

"We procured eighteen common sized dinner plates, into each of which we put about half a gill of vinegar and molasses, previously prepared, in the proportion of four parts of the former to one of the latter. These were set on small stakes, or

poles, driven into the ground in the cotton fields, one to about each three acres, and reaching a little above the cotton plant, with a six inch square board tacked on the top to receive the plate. These arrangements were made in the evening, soon after the flies had made their appearance. The next morning we found from eighteen to thirty-five moths to each plate. The experiment was continued for five or six days, distributing the plates over the entire field, each day's success decreasing until the number was reduced to two or three to each plate. The crop that year was very little injured by the boll worm, as the flies feed only at night. The plates should be visited late every evening, the insects taken out, and the vessels replenished, as circumstances may require. I have tried the experiment with results equally as satisfactory, and shall continue it until a better one is adopted." Mr. Glover further remarks that some tasteless and effective poison mixed with the liquid would doubtless kill any moth they may have tasted without getting into the mixture.

The Angora Rabbit.

This is one of the handsomest of the fancy rabbits and is of medium size, weighing about five pounds. It has erect ears and the fur is very long, fine and silky, and when it can be obtained in any quantity, brings large prices. In color, the white is oftenest seen; besides this, there are gray, blue, black and white, and fawn; the latter color being very rare and high priced. The flesh is not as fine for table use as other varieties. They are said to be more gregarious than other breeds, living together in perfect harmony, the buck taking care of the little ones, and exercising patriarchal authority over his whole family. In this respect they differ greatly from all other varieties. They are natives of Asia Minor, and take their name from the City of Angora.

Bees and Practical Bee-Keeping.

How to Start an Apiary.

We are asked, "How am I to commence bee-keeping?"

No one can expect to succeed at any sort of business or labor without having a knowledge of "how the operations are to be performed." This is particularly true in conducting an apiary.

In the first place, get Langstroth's work on the "Honey Bee," or Quinby's Bee-Keeping Explained." These books treat of the principles of apiculture in a very practical and comprehensive style. But as *practice* must go with theory in this business, you must get one or two stocks of bees to commence with. If you can get them in a movable comb hive so much the better, for unless they are in a hive that gives you perfect control of the combs, you will find it impossible to manage your bees so that you can secure the greatest returns. If they are in a box-hive, you must transfer them into a movable comb as soon as time and other conditions will admit. Most of apiarians prefer to do this in the spring, when fruit trees are in bloom; but, with carful hands, it may be done much later. In my latitude I prefer to do it in February, or early in March. At this time the stores of the colony are not so full, and the combs can be more easily handled. But it must also be borne in mind, that at this time breeding has commenced, and large quantities of food are required, hence if sufficient honey in comb has not been transferred to the frames, the colony must be carefully and *regularly* fed. To transfer a stock of bees and comb into a frame hive may seem a formidable undertaking to a person who is not familiar with the operations of an apiary. Yet it can be done by any one who possesses care, tact, and decision. In the first place have every thing ready—know what you want and what you are going to do before you commence. Prepare a lot of small sticks, say one-quarter inch wide and one-eighth inch thick, long enough to reach (with one-quarter inch projection at each end) across the frame from top to bottom. Notch each end, and with small annealed wire tie two of the sticks at one end one inch apart. Also, tie a piece of wire three or four inches long to the other end of one of the sticks. The object of these sticks is to hold the comb in the frames until the bees unite it fast, when the sticks should be removed. It will take four or five pairs of these sticks to each frame. Some use strings and rubber bands to hold the sticks, but the wire is best. I prefer to make my transfer in a close room, where I will not be annoyed by robbers. For this purpose I select a room with one window—if more than one, close the blinds. In this room you want a table or high box to manipulate on. Also, a hammer, chisel and saw, to get the old box-hive apart, and a long knife for cutting the combs loose. Place your new hive right in front of the window, with a sheet tacked to the entrance board. Have also a small board, a little larger than your frame, to lay the comb on when fitting it in the frame. Go to your box-hive, blow a few whiffs of smoke, made by burning a roll of cotton rags into the

entrance. The bees will soon scamper and fill themselves with honey. Tilt the hive a little to one side and give them a little more smoke, until they set up a loud humming sound. Now turn the hive top down, and throw a cloth over the mouth, and carry it in this manner into the room, and place it (mouth up) on the floor beside your table. Place a box, or basket, over the mouth, and close the crack around with a sheet. Now commence a vigorous drumming with sticks, on the sides of the hive. Keep this up fifteen or twenty minutes, by which time the majority of the bees will have passed up into the box. Move this gently on the edge of the table. Cut the combs loose on one side of the hive, and with hammer and chisel cut the nails and pry off the side. Sometimes it is necessary to take off two sides. Cut out the first comb. Lay your transfer sticks across your small board, then your frame on top. Cut your comb to fit outside the frame, and confine it by bringing your stick across it and wireing to the under stick. If one piece of comb is not sufficiently large to fill the frame, fit in other pieces until it is full. The comb should be placed in the frames in the same relative position it occupies in the hive. It is best to put the comb containing honey in the outside frames, and confine the brood to the centre. Drone comb should be rejected. If white, it can be used in the honey-boxes. In removing the comb from the gum, the bees need not be feared in the least—they will be as gentle as flies, work carefully, and they will get out of the way; if any comb is covered by them brush them off, (or better shake them off,) with a whisk of broom-straw or pine twig into the new hive in front of the window. When all the combs are transferred, place on your honey-board or quilt, and close the hive with the top. Open the entrance and ventilators to their full capacity, and shake your bees on the sheet, in front, and let them enter the same as a swarm. If any loiterers blockade the entrance, give them a little stir with your broom and they will go in. If at first they do not make for the entrance, stir them toward it. A long handled dipper or spoon is excellent for this purpose. When all have gone in remove them to their stand.

Again I am asked: "What hive do I recommend?" In my own apiary, I want no hive with tall, tight, fitting frames. Every frame must be so arranged that it can be removed and replaced with the greatest ease, without jarring, and without mashing a single bee. In our climate a frame with a depth of from nine to ten inches is amply sufficient. The Langstroth patent, which is now about expired, covers pretty much all the valuable features of all the so-called patent hives; hence, before you invest in "the right" to use you had better inquire into the nature of the patent, or you might be paying your money for a thing that does not exist.

Augusta, Ga. J. P. H. BROWN.

The Literature of Apiculture.

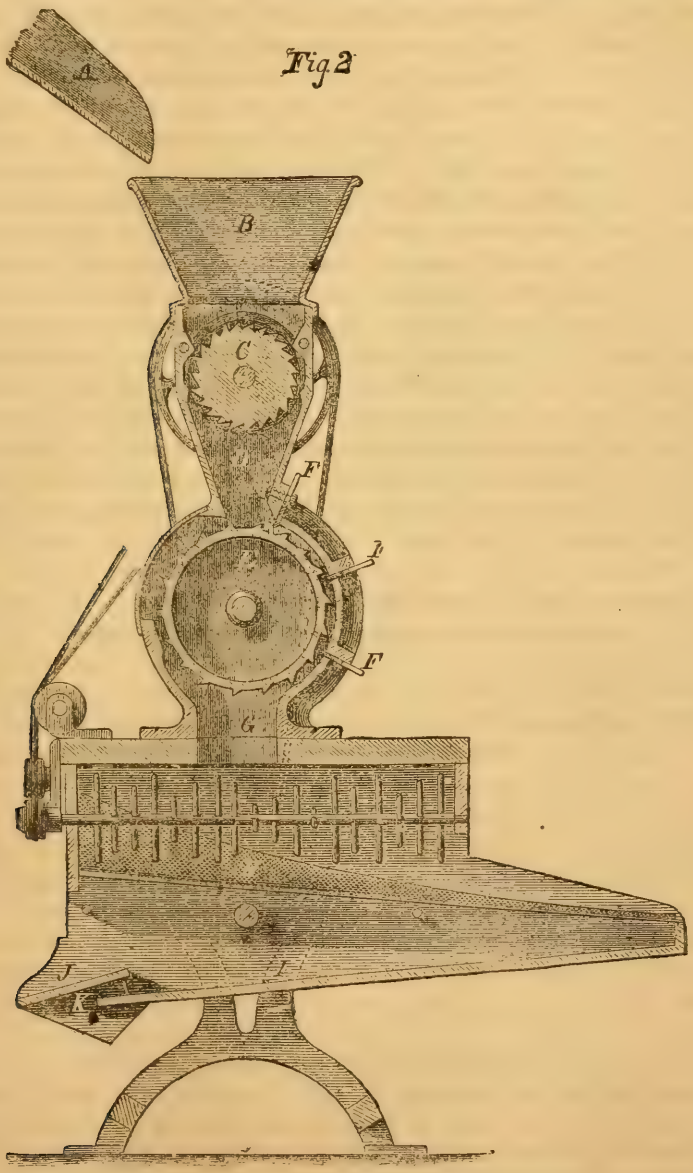
"Annals of Bee Culture, for 1872," by D. L. Adair, Hawesville, Ky. This is a year book for bee-keepers, by an accomplished apiarian, assisted by the best American bee-keepers and naturalists, and is worth many times its cost to any one interested in bees. [Price, fifty cents. Address D. L. Adair, Hawesville, Ky.]

"Progressive Bee Culture, or Apine Instincts and Labors Defined, illustrated and systemized upon a New Theory," by D. L. Adair, Hawesville, Ky. A useful little work, the character of which is well explained by the title. [Price, 25 cts.]

MINING AND THE MECHANIC ARTS.

Further Description of Kahnweiler's Cotton Seed Huller.

Fig 2



The accompanying cut represents a section of Kahnweiler's Cotton Seed Hulling Machine, described in our last number, and will enable the reader to understand its parts and operation:

A represents the chute which conveys the seed to the hopper. B is the hopper, C is a toothed or rather a ribbed cylinder, which feeds down the seed, but arrests the passage of stones, nails or other substances likely to injure the machine. These foreign matters wedge between the cylinder and the hopper, and cause the belt, which drives the ribbed cylinder, to slip until the obstruction shall have been removed. D is the chute through which the seed passes from the feed cylinder, C, to the hulling wheel, E. This wheel is made of three notched and ribbed sections, which act in conjunction with the knives, F, in the concave shell of the hulling wheel, to crack the hulls of the seed. The sections of the hulling wheel are so arranged that the cutting notches or ribbs are staggered, thus rendering the action of the huller more uniform and steady. The knives are adjustable, so as to secure their proper action upon the seed. G is a chute between the hulling cylinder and the screen, H. This last is made of wire netting and bent into the form of a portion of the surface of a cylinder. The seed, when it reaches this screen, is acted upon by a revolving agitator or rubber, formed of a shaft with radiating arms, as shown, which completes the separation of the hulls from the kernels. The latter pass through the screen, while the coarser hulls and fibres are carried along and discharged from the lip of the screen. The hulled seed is then received into the box screen, I, which, being shaken by suitable mechanism, separates the still remaining lighter portions of the hulls that pass the wire screen, carrying these portions out over the apron, J, while the cleaned and hulled seed passes out through the chute, K.

A Simple and Practical Process of Hardening Plough Points and other Farm Implements.

A friend who has been residing for a long series of years in the country, and who is an experienced mechanic, sends us the following simple process of hardening plough points or other farm implements, which he says he has often tried with success :

After finishing, heat to a bright red, put on a lump of prussiate of potash ; continue the heat until the potash melts and runs over the surface of the iron you wish to harden. Let it burn until a blue flame appears, then plunge in cold water.

I have often hardened the thread on a bolt by the above process, and substituted it for a tap, cutting a good thread.

It would be advantageous to farmers to harden their plough points in dry weather, which can be done by any ordinary smith, by the above process.

T. W. D.

An Augur for Earth Work.—A mechanic at Chatsworth, Illinois, has invented an augur to bore an eight inch hole into the ground. In clay, he can work very rapidly, often boring sixty feet in a day, but working much slower in hard-pan. On reaching a water holding stratum, the augur is withdrawn and the hole is lined with an eight inch drain tile, (six inch bore) by letting them down one after another to the bottom. This furnishes a much more durable lining than iron, and very much cheaper for the size. Very often the water rises in the wells nearly to the surface of the ground ; while the supply is abundant and never-failing.

Applied Chemistry and Mineralogy.

All communications and notes of inquiry intended for this Department, as well as specimens of soils, fertilizers and minerals for analysis or description, should be addressed to Charles U. Shepard, Jr., M. D., No. 20 Broad street, Charleston, S. C.

Soils.—VII.

Practical analyses of soils by the method of M. Grandeau.

The writer gladly avails himself of the permission of Wm. L. Bradley, Esq., of Boston, Mass., to publish the following analyses of soils, executed by him during the past winter for that well known manufacturer of standard fertilizers. The results are interesting, not only on account of the new method employed, but also because of their practical value.

The soils investigated are from the lands of Messrs. Thad. and George Smith, of North Hadley, Mass., to whom the writer is indebted for much kindness and assistance. The samples were obtained by vertically sinking tin cases, twelve inches long, to their bottom in the loose soil; they thus afforded fair samples of the soil and subsoil to that depth.

Description of soils.

A. From the first terrace above the Connecticut river meadows, between Hadley and North Hadley, soil consists of a sandy loam eight inches deep; below, a tougher, less sandy subsoil. This soil has not been manured for several years, nor has it produced any crops, save a small amount of grass. *Practically, it has been lying in fallow.*

B. From a hilly, sandy belt, lying just beyond the Connecticut river meadows, and forming the first terrace above them, at North Hadley, soil consists of a darker, fine, sandy top-soil, ten inches deep; below, a lighter, sandy subsoil. This land had been heavily manured for several years with stable manure and excellent commercial fertilizers,* and had yearly produced a large crop (2,000 pounds) of tobacco, of superior quality.

C. From the meadow lands on the bank of the Connecticut river at North Hadley, the soil consists of a dark, fine, sandy loam surface-soil to the depth of nine inches; below, a light-colored, sandy subsoil. This land has likewise been heavily enriched each year with the same manures and the same result as B.

* Manufactured by Wm. L. Bradley, Boston. At the time of these investigations I had submitted to me a number of Mr. Bradley's Commercial Manures for tobacco, and found them by analysis, to be admirably adapted to their purpose.

The *preliminary investigation* of these soils afforded the following results. The composition of the *fresh soils* is :

	A	B	C
	p. c.	*p. c.*	*p. c.*
Capillary Moisture, expelled on air drying	25.92	12.43	15.49
Hygroscopic Moisture, expelled at 125° C	1.55	0.96	1.00
Organic Matter, expelled at low red-heat	4.70	2.42	2.16
Fixed Ingredients	67.83	84.19	81.45
	100.00	100.00	100.00
Weight of fresh soil,			
	lbs.	*lbs.*	*lbs.*
Per square foot surface, to the depth of one foot	69.09	74.81	78.7
Per acre surface, one foot deep	3010560.	3258723.	3428172.

In 1000 parts air-dry soil are contained:

Of the following ingredients,	A	B	C
	p. m.	*p. m.*	*p. m.*
Phosphoric acid	1.756	2.190	2.560
Sulphuric acid	0.440	0.311	0.280
Carbonic acid	2.290	0.107	traces.
Silicic acid (soluble)	2.180	0.260	0.177
Potash	0.550	0.371	0.391
Soda	0.096	0.250	0.096
Magnesia	2.262	2.050	3.777
Lime	0.542	1.880	2.329
Alumina	13.560	12.400	4.533
Oxide of Iron	17.154	4.610	19.480
Fixed ingredients soluble in cold hydro-chloric acid, and determined	40.830	24.429	35.933
Fixed ingredients insoluble and undetermined, (mostly sand)	875.028	936.974	926 667
Organic Matter	63.219	27.635	25.600
Containing Nitrogen	1.466	1.029	1.09
Equivalent in Ammonia	1.780	1.250	1.33
Moisture (hygroscopic)	20.923	10.962	11.800
Total	1000.000	1000.000	1000.000

The following table shows the amount of each of the more important ingredients of plant-food contained in one acre of land, to the depth of one foot, for each description of soil.

Indispensable ingredients of plant-food.	*Are contained in one acre of* FRESH *soil to the depth of one foot.*		
	A	B	C
	lbs.	*lbs.*	*lbs.*
Phosphoric acid	3916.	6192.	7415.
Sulphuric acid	981.	855.	811.
Potash	1227.	1059.	1131.
Magnesia	5046	5849.	10943.
Lime	1209.	5364.	6747.
Organic Matter	141496.	78861.	74049.
Containing Nitrogen	3271.	2936.	3154.
Capable of yielding Ammonia	3971.	3096.	3848.

The above table expresses in lbs. the total quantity of the ingredients mentioned, contained in one acre of fresh soil to the depth of one foot, as obtained by the extraction with cold and concentrated hydrochloric acid; *i. e.*, all the plant-food which was *at the time of the analysis*, and *for an indefinitely future period*, available to plants. (See preceding articles on soils.)

A comparison of the analytical results shows:

1. That of *phosphoric acid* the intensively cultivated soils (B and C) contain 50 to 80 p. c. more than that previously lying, practically, in fallow.

2. That the amounts of *sulphuric acid*, *potash* and nitrogen are nearly the same for all.

3. That the amount of *organic matter* in A is double that in either B or C.

4. That the amounts of *magnesia* and *lime* in C are largely in excess of those in A and B.

5. But most important and obvious is the fact, that the results of an extraction of a soil by a strong mineral acid, do not afford any criterion as to its fertility. Since *three important ingredients* of plant-food are contained in the acid extracts of the three above soils *to an equal amount*, notwithstanding that one of them (A) is in vastly less productive condition than the other two; and the amounts of other important ingredients afford no explanation of this want of fertility.*

It is, then, necessary to have recourse to some other method of analysis, if it is desired to ascertain the availability of the plant-food contained in a soil, to the end of forming an estimate of its fertility, and of restoring, or disengaging from existent mineral forms, those ingredients that are deficient or inoperative.

The method of M. Grandeau has been described by the writer, in the April number of this journal, where he endeavored to show its value as a practical mode of soil-analysis. The publication of the following analytical results of the investigation of the same soils by this new system, may elucidate what has been previously communicated, and will afford the material for several deductions.

Soil-Analyses, According to the Method of M. Grandeau.

Following Ingredients of Plant-food.	From one thousand parts air-dry soil are extracted,		
	A *p. m.*	B *p. m.*	C *p. m.*
Phosphoric acid	0.256	0.966	0.776
Sulphuric acid	traces.	0.188	0.120
Silicic acid, (soluble in dilute acid)	0.116	0.150	0.144
Potash	0.022	0.070	0.048
Soda	0.015	0.036	0.018
Magnesia	0.594	1.190	0.592
Lime	0.182	0.353	0.158
Total fixed Ingredients determined	1.185	2.953	1.856
Fixed Ingredients (Silica) insoluble in acid	0.425	0.243	0.484
Organic matter	5.900	9.998	6.440
Total humus, or "matière noire"	7.510	13.194	8.780

A calculation from the preceding tables gives the following as the amounts of the important ingredients of plant-food contained in one acre of *fresh soil*, extractable by M. Grandeau's method:

* This is especially evident in the case of A and B, where, with the exception of the lime and organic matter, there is little difference in the amounts of those ingredients that are considered most essential to plant-nourishment.

Essential Ingredients of Plant-food.	Amount of each capable of extraction by M. Grandeau's process, contained in one acre of fresh soil to the depth of one foot.		
	A	B	C
	lbs.	*lbs.*	*lbs.*
Phosphoric acid	571.	2757.	2248.
Sulphuric acid	.....	563.	343.
Silicic acid (soluble in dilute acid)	2587.	428.	417.
Potash	49.	200.	139.
Soda	33.	103.	52.
Magnesia	1325.	3396.	1713.
Lime	406.	1007.	458.
Organic matter	13159.	27271.	18656.

That these results (which appear to the writer to have an important bearing), may be fully understood by the reader, attention is called to the following tables. The first shows the ratio between the total amounts of each of the most essential ingredients of plant-food in the three soils; the amount of each ingredient in soil A being taken as unity. The second shows the ratio between the amounts of each of the above ingredients, as extracted by M. Grandeau's process, in the same soils; here, also, the amount of each in soil A is taken as unity.

Table 1.

Essential ingredients of plant-food.	Ratio between the total amounts (as extracted by cold hydrochloric acid) of the ingredients of soils B and C, as compared with those of A.		
	Soil previously in fallow; condition unproductive.	Soils previously intensively cultivated; condition productive.	
	A	B	C
Phosphoric acid	1.	1.5	1.8
Sulphuric acid	1.	0.8	0.8
Potash	1.	0.8	0.9
Lime	1.	4.4	5.6
Magnesia	1.	1.1	2.1
Organic Matter	1.	0.5	0.5

Table 2.

Same ingredients.	Ratio between the amount extracted by M. G.'s process, of the ingredients of B and C as compared with those of A.		
	A	B	C
Phosphoric acid	1.	4.8	3.9
Sulphuric acid	traces.	large am't.	large am't.
Potash	1.	4.1	2.8
*Lime	1.	2.5	1.1
Magnesia	1.	2.5	1.3
Organic Matter	1.	2.1	1.4

* It will be recollected that a considerable quantity of lime and magnesia are extracted by the preliminary treatment of the soil with exceedingly dilute acid. The amounts of these ingredients which appear above, represent only that portion in intimate union with the organic matter, and forming a part of Grandeau's "black matter."

With a humble sense of the limited value which can be attached to so few observations, the writer is, nevertheless, tempted to make the following suggestions, and hopes that future investigations may follow so abundantly and speedily, as to correct or confirm his deductions.

1. M. Grandeau's method appears to furnish a more or less practical criterion of the fertility of the soil, which is not afforded by the solution in cold or hot mineral acids. The examples communicated illustrate this fact. Naturally there is a strong similarity between A and C. Intensive cultivation, *i. e.*, the intelligent use of first-class fertilizers, has produced the same "condition" in B and C, while the want of it has left A in a comparatively sterile state. The *ultimate analysis* fails to show any reason for this great practical difference. M. Grandeau's method, on the contrary, gives results full of importance and hope. Analyzed by his method, the fertile soils yield four to five times as much *phosphoric acid*, largely increased amounts of *sulphuric acid*, three to four times as much *potash*, and one hundred to fifty per cent more *organic matter*, than the soil stated to be unproductive. And this, too, in spite of the fact that a large crop of an exhaustive character (tobacco) had just been gathered from B and C.

2. Does humus (in the wide sense) really embrace all the mineral plant-food in an assimilable condition, contained in a soil? This question demands careful consideration and especially, experiment. In forming an opinion it will be necessary to give due weight to differences in soils and the fertilizers employed for their enrichment; to the chemical changes produced naturally or artificially. It may be surmised, however, that in a sandy soil, properly drained, *destitute of organic matter*, chemical manures would fail to enter into the organico-mineral combination discovered by M. Grandeau, though they could, notwithstanding, nourish vegetation. In such a case, where there are no disturbing substances (either organic or mineral,) to decompose the combinations existing in the chemical manure, the mineral matter of the latter might wholly escape extraction by M. G.'s process, and yet plants might thrive as in an aqueous solution of the same salts. Such a case would be, presumedly, rare.

3. Is all the mineral matter extracted by M. Grandeau's process, of such a chemical character that it can be designated as immediately available? The writer is unable at present to adduce any farther information than that contained in the previous article, and leaves this question for future investigation, although the evidence seems to be clearly affirmative.

4. A glance at the table, giving in pounds the amount of each of the essential ingredients contained in one acre of the unproductive land to the depth of one foot, shows a larger amount as capable of extraction by M. Grandeau's process, and hence as (presumedly) assimilable, than would be required by one crop of grain, hay or even some of the commercial plants.

This opens the question, how many times the mineral food required by a crop, must be contained in the soil in an available form to ensure its maturation? Experiments, only, can furnish the answer. It must be borne in mind, however, that this question has nothing to do with those fields where the enrichment is not spread broadcast, but put in immediate proximity to the growing plant. As an important factor in the solution of this question, appears the amount of root in

each crop, *i. e.* the volume of earth permeated by the rootlets and their relative density of growth. For, as it is from a comparatively insoluble substance that the food is obtained, the rootlet must get to it; and the more rootlets there are, the more will the humus be depleted of its mineral food. The following extract from Prof. S. W. Johnson's able lecture on "Soil Exhaustion and Rotation in Crops," appears opportune:

"On comparing together the roots of our ordinary crops, we find that when they grow under similar circumstances there is a great difference in the depth to which they extend, a great difference in the degree in which they branch, and a great difference in the absolute quantity of roots."

"As to depth, Schubart has made the most satisfactory observation we possess on the roots of several important crops growing in the field. He separated them by the following expedient: An excavation was made in the field to the depth of six feet, and a stream of water was directed against the vertical wall until it was washed away, so that the roots of the plants growing in it were laid bare. The roots thus exposed in a field of rye, in one of beans, and in a bed of garden peas, presented the appearance of a mat or felt of white fibres to the depth of about four feet from the ground. Roots of winter wheat were observed as deep as seven feet in a light subsoil, forty-seven days after sowing. The depth of the roots of winter wheat, winter rye, and winter coleseed, as well as of clover, was three to four feet. Schubart further collected and weighed the roots of wheat, rye and peas, and ascertained their proportion of the entire plant."

5. The results show, also, that the liberal use of natural and commercial manures more than compensates for the annual drain by the crop.

A limited space and other topics, which have accumulated during the publication of these articles on soil-analysis, prevent the present continuation of this subject. If the writer has succeeded in showing an attractive field for the activity of agricultural chemists; if his work and that of his assistants, have demonstrated the importance of chemical research to agricultural operations, whether practical or scientific, then will he feel amply rewarded. The field is wide, little has been accomplished; innumerable problems call for *labor* in the field and the laboratory. To those who find it difficult to understand agricultural chemical papers, the writer, fully aware of his own shortcomings, would reply that the subjects are full of difficulties, alike to the investigator and the student. The solution of these questions demands protracted application; their comprehension, at least an elementary knowledge of chemical facts and laws. S.

Laboratory for Analytical Chemistry, 20 *Broad Street.*

Phoenix Island Guano.

It seems proper to direct attention to the fact that the piece of rock guano, kindly furnished by Messrs. Wilcox, Gibbs & Co., analyzed and described by Professor Charles U. Shepard, Sr., in the May number of this Journal, presented so different an appearance from the cargo of guano whence it was obtained, as to cause it to be put aside for future examination. The cargo had the customary fine physical condition, and its chemical quality as determined in this laboratory, was excellent.

The Spring Meeting of the State Agricultural and Mechanical Society.

The recent meeting of this honorable body at Charleston, afforded me a welcome opportunity of listening to the able essays and debates read and participated in by members representing the intelligent agriculture of the State. Several thoughts were suggested to me by the discussion on the subject of fertilizers, and I would gladly have asked leave to add a few chemical opinions to the instructive statements of actual experience on the part of the members, had I not feared to thereby trespass on the courtesy of the society, which had already set apart a portion of its valuable time for the reading of my paper. This particular debate (highly interesting from every standpoint,) attested the importance of carefully examining several topics prefatory to the consideration of the question proper.* I therefore propose to devote a few pages of this department in several of the summer numbers, to an investigation of the following points:

1. The different kinds of manures.
2. The changes undergone by manures in the soil.
3. The mode of their utilization by plants.

It will be my aim to make these articles as practical as possible, and since the RURAL CAROLINIAN is read by most, if not all, of the members of the Society, I trust that my labors may be of some avail in advancing progressive agriculture.

With regard to the "reduced" phosphate I would merely mention my having called attention in the RURAL CAROLINIAN (January, 1873, postscript to article on The Statement of Analyses of Fertilizers), to a previous paper (June, 1872,) on that subject as containing my views. In the latter article I took occasion to remark: "On the other hand, the solubility of a salt renders its equal distribution through a soil much more perfect than the most careful system of manipulation can produce with an insoluble one, and this is, perhaps, the great advantage derived from the use of a highly soluble phosphate." S.

April 30th, 1873.

Soot for Grapes.

EDITOR OF THE RURAL CAROLINIAN: During two seasons we nursed, fed and petted a Hartford Prolific Grape-vine—as much for its shade over a window as for its fruit—but it persisted in remaining a stunted cane, yellow, and refusing to climb. At the window, on the other side of the door, we had a stunted rose-bush, also yellow and refusing to climb. Despairing of shade, grapes and roses, we finally bethought ourselves of soot as a manure, and forthwith made a "soot tea" by steeping a tea-cup of soot in a quart of water. This we administered, two doses each, to both the tree and the vine. The vine grew six feet in height in the space of six weeks, the rose-bush four feet in the same length of time—both thereafter rejoicing in raiment of living green. ELLA.

* "The cheapest fertilizer, whether domestic or commercial, and the most economical time and method of its application."

Patrons of Husbandry and Agricultural Societies.

Spring Meeting of the State Agricultural Society.

The spring meeting of the State Agricultural and Mechanical Society of South Carolina, in Charleston, (April 29th and 30th,) though it did not bring together so large a representation of the planting interests of the State, as we had hoped to see, was fully up to our expectations in interest and profit to those who were fortunate enough to be present. The papers read were excellent practical essays and the discussions mainly effective, liberal in spirit and kindly courteous in tone. Such meetings cannot fail to do good, and we hope they may be made a permanent rule with the Society.

The courtesies of our local association, (South Carolina Agricultural Society,) so gracefully extended to the State Society, were fully appreciated, and added to the interest and enjoyments of the occasion. The excursion up the Ashley and the dinner among the phosphate rocks, were among the pleasantest things of the kind we ever participated in; and seemed to be enjoyed by the ladies and gentlemen, (all guests of the South Carolina Agricultural Society) with a zest seldom witnessed.

Patrons of Husbandry in Florida.

It is important that all the Southern States should be represented in the Order. The stronger we become and the wider our organization may extend the greater will be our ability to help each other and promote the interests of agriculture. No link should be wanting in the chain. Florida is now, we believe, the only Southern State in which the Patrons of Husbandry have not obtained a foot-hold, and we know from our correspondence that there are many farmers in the "Land of Flowers," who are alive to the importance of the organization. The time has come to act. Having been duly appointed General Deputy of the National Grange for the State of Florida, we shall take pleasure in giving all inquirers the necessary information in regard to the preliminary organization of Granges, and will visit the State for the purpose of perfecting such organization whenever a sufficient number shall be ready to warrant the movement. Good friends, will you not now take hold of this matter in earnest?

D. H. JACQUES,
General Deputy of the N. G. for Florida.

Our Annual Floral Festival.

The Floral Fair of April 30th and May 1st, was an exceedingly brilliant and successful one in spite of somewhat unfavorable weather, and reflected great credit not only on the exhibitors, but on the efficient gentlemen of the committee which had it in charge. The arrangements were all admirable, and showed to the best advantage to the admiring crowds of people who visited the college

grounds where the exhibition was held, the floral treasures so generously contributed. We can hardly suggest an improvement in the management of these Floral Fairs; but we can not help thinking that a week or two later in the season would be more likely to give us good weather, and quite as good a display of flowers. We hope to see the time when the South Carolina Agricultural Society will find it practicable to make these horticultural exhibitions of quarterly instead of annual recurrence.

Grange Notes and Queries.

What the Order is Doing in Iowa.

One-third of all the grain-elevators and grain warehouses in Iowa, are owned or controlled by the Granges, and no less than 5,000,000 bushels of grain were shipped to Chicago on Grange account prior to December last. The number of cattle and hogs shipped in the same manner is enormous, and the reports received from all these shipments show an increased profit to the farmers of from ten to forty per cent., as compared with the usage received at the hands of the average "middleman" in times previous. In the matter of purchasing agricultural implements direct from the manufacturers, the Grange purchases of the State have saved the farmers, by actual computation and comparison of the price at the implement store, $365,000. For instance, one class of reapers rating at No. 1, retailing at $240, was sold to the Grange, in fours or more, at $140, a clear "save" of $100 on each machine. During the present year not less than $100,000 will be invested by the Granges in the establishment of manufactories and elevators throughout the State; thus, by bringing skilled labor among them, creating a home demand for the products of the farm.

Good Movements in the Granges.

We are glad to learn that many of our Granges are acting (as all should act) on the principle that the Order is to be one of the permanent institutions of the country, and that each Grange should have a real local habitation as well as a name, and are building and furnishing Grange Halls, establishing Reading Rooms and Libraries. This is the right spirit. A Patron writing from one of the upper counties, says:

In our Grange I introduced a resolution, which was adopted, "*nem con.*," to subscribe for ten or fifteen Agricultural journals. At our meetings they are taken up readily, and members seem very anxious to read them. I think it will do good. We also passed a resolution requiring the Secretary to open a correspondence with the other county Granges to ascertain the area planted in cotton, corn, wheat and oats, compared to last year, the amount of fertilizers used, mules bought, (from Kentucky) &c. Also a resolution requiring each member of the Grange who tried a fertilizer, to note down the kind, the amount applied per acre, how applied, the variety of soil and modes of culture and net results.

The Patrons in Missouri.

A State Grange of Patrons of Husbandry has been organized in Missouri, embracing about two hundred subordinate Granges. "These," *Coleman's Rural*

World says, "are some of the blossoms of organization and the fruit will be reaped in due season—already it begins to appear, although in an unripe state. Some manufacturers are agreeing to sell directly to clubs and Granges, and those who are holding back must eventually come down. It is becoming very evident to them, that the farmers mean business."

The Order in California.

We learn with pleasure that W. H. Baxter, Esq., General Deputy of the National Grange, for California, is fairly at work on the Pacific coast, having lately organized several Granges in his State, and having many applications for additional Granges. A State Grange will soon be organized. We extend to our brothers of the Far West the fraternal "grip," and bid them welcome within the "Gates."

Non-Attendance and Non-Payment of Dues.

A. W. M. asks what shall be done with members who fail to attend meetings, and whose dues are unpaid. The by-laws of the Grange should provide for such cases. Delinquent members should first be formally cited to appear, when if they fail to do so, the Grange should take such action as its by-laws may authorize. For a reply to the other questions see By-laws of the State Grange of South Carolina, Article XIX.

Miscellaneous Correspondence and Notices.

Notes Retrospective and Prospective.

Editor of the Rural Carolinian: The Vernal Equinox was gusty, with little rain, cold clear offs, with high winds. Since that time we have had a variety of weather from July to November, in April; it has been dry, very windy and changeable. All the cloud-ups have been cleared off by norwesters, very near akin to Texas, northers. We have had cirri clouds, (the cat-tails of the sailor;) we have had the snow cumuili clouds and fan-shaped storm clouds, all by turns.

Are we to take, as some think, the Vernal Equinox as a type of the future season? If so, it is ominous.

From the 13th to 19th of April, the nights have been cool with light frosts; every morning winds high and cold, from west northwest. Thursday, 24th, had a big white frost, which made sad havoc among garden truck and small fruits. Early cotton planters are in the dumps, and wishing "Festina lente" had occurred to them. Monday, 28th, west, northeast, had a light rain—planters jubilant over the season—cotton will now come up strong, and the dry lots and fancy patches held back for the fertilizers can be brought into play. More cotton—nothing but more cotton will do. The fertilizers have been pushing their way steadily up to the very face of the Blue Ridge, widening the cotton belt and making us tributary to the Western corn grower. But lackaday have we not the "Air Line" open now to supply our wants, and railroads multiplying all around us! Let us have cheap cotton and clothe the world. Arn't we the great civilizers? It is our destiny to revolutionize. Well, the corn cribs are all about empty; the fall oats have been killed out; the spring oats look "sorry;" the wheat wears a "sere and yellow leaf" look, the stands of corn are bad, the ground has broken up cloddy and hard, but now at May day, it is raining, a "beautiful season," and *voila*, how every face reflects the smile dame Nature has assumed.

The Caper Plant Capparis Spinosa.

EDITOR OF THE RURAL CAROLINIAN: Among the many useful plants that might be introduced and profitably cultivated among us one of the most profitable and useful is the above named plant. Although it is said to do best in a rocky soil and in a more nearly tropical climate, yet it has always done very well with me and my soil in a flat clayey sea island soil.

The first plant that I imported from France lived at least from twelve to fifteen years, and survived the neglect of the whole war and the ill usage of the two years after, and when I returned here, in 1868, it put up two or three times, but as the root appeared to be exhausted, I could not keep it alive long enough to derive any benefit from it. When I first imported this plant, not knowing how to treat it, I merely set it out in good land, where it grew but produced very few buds, but as it was killed down every winter I had about a bushel of good manure put on it each fall in order to protect it from being killed by the cold, and the result was that the next summer it grew much more vigorously, and bore so well, that I gathered four bottles of capers, and continued to do so every summer until the war.

It is the young flower-buds that are pickled, gathered before they open, and they are merely thrown into vinegar as fast as they are gathered, and for this purpose I kept an old capers bottle, with vinegar in it, in some shade near by my plant, throwing into it each day all that were fit. The flower is rather pretty, resembling the mimosa family and, I think, pleasant smelling. I imported the plants several times for my own use only, but so many persons were anxious to get them that I gave away all except the original plant and one other.

The plants can be procured from André Leroy, of Angers, France, through their agents in New York, Messrs. Bruguiére & Thiebaud, 51 Cedar street, and the price at the nursery, in Angers, is 40 cents, gold, per plant. Any person writing to Messrs. B. & T., enclosing two P. O. stamps, will receive from them Andre Leroy's catalogue containing thousands of useful and ornamental plants for sale. R. C.

Vegetable Plants for the South.

EDITOR OF THE RURAL CAROLINIAN: I was not a little astonished to see the article under the above heading, from Mr. Peter Henderson; for by sowing seeds in boxes or tubs, made of the common flour barrel, sawed in two, or lard tubs, filled with rich earth, or well decomposed manure, I have never found the least difficulty in getting as many plants as I wanted. I sowed, for instance, quite a quantity of cabbage seeds the past autumn, in the open ground, and the result is that I have about one dozen plants, while from the *remnant* of a paper of Winningstatt cabbage, sown in a tub, I have now quite plants enough for my family of seven grown persons, and I have this day sown seeds of cauliflower, Sandringham celery and two varieties of parsley, in the same way, having found by experience that I could not depend upon seedings in the open ground for these delicate plants. I have for many years past sown my seeds of the Guinea squash, (purple egg plant) cayenne pepper and first crop of tomato plants in this way. If the weather should be hot and dry I put these tubs or boxes in a situation where they will be shaded a part of the day. R. C.

R. C.'s plan is an excellent one for the family garden, but is hardly practicable on the large scale required in truck farming operations.—ED.

Plantation Buildings for the Times.

EDITOR OF THE RURAL CAROLINIAN: Allow me to make a few suggestions to you, or at least call your attention to an item or two of great interest to the South at this time. It is a style and finish of Plantation Buildings adapted to the times and small planters. They should be cheap, economical, and convenient in every way for whatever they are designed for, either a dwelling, gin or barn, and stabling.

And would it not be a good plan to get the State Fairs to offer liberal premiums this fall for such, with designs or plans, and specifications for the various kinds, and all the plans, &c., to be the property of the said Societies, of which they could have the best illustrated and published for the benefit of their citizens in your RURAL CAROLINIAN.

I think that if this was done it would call out the views of some of your or our most successful planters on the subject referred to about buildings to meet the wants of the community at large; it would bring in plans, &c., from various parts of your State, and, perhaps, other Southern States, just as the chance offers, but if it meets your views, start it for your own State, and others will follow. T. Z. P.

Mr. Lartigue's Fence.

EDITOR OF THE RURAL CAROLINIAN: The fence introduced by Mr. Lartigue, and which "R. C." says is not practicable, except near a saw-mill, is easily and cheaply made of poles of sassafras or mulberry, split or faced, the braces made of smaller poles than the posts; I would recommend that a small piece be nailed near the top of the post on which to lay the top rail, it will then take no more rails than in R. C's. fence, and will be more durable. A. T. M.

The Pine-Apple Strawberry.

EDITOR RURAL CAROLINIAN: In reply to your inquiry in reference to *strawberries*, I beg leave to say that from an experience of twenty years, the Pine-Apple or Carolina, taking everything into consideration, is entitled to the first place. It has been tried in comparison with the Wilson's Albany and Hovey's seedling, and as to productiveness and power to withstand the vicissitudes of the climate is superior to both. The *mulberry* is another unfailing crop with us, its fruit is pleasant, and for hogs, poultry and birds, is unsurpassed.

Allendale, S. C. BEN. MARTIN.

Inquiries and Answers.

We are glad to learn that T. D. F. reads the RURAL CAROLINIAN, and are not displeased because he criticises it, and thinks there are many things in it that "will not answer when put to the test." We have no doubt that such is the fact. We print our own views, which may not always be sound, and we print what other people think, who may also sometimes be wrong, but we want our readers, like St. Paul, to "Prove all things, and hold fast that which is *good*." When T. D. F. talks about being governed by the changes of the moon in his planting operations, we conclude that *he* is holding on to an antiquated "humbug," worse than the

"humus theory" and too absurd to be treated seriously; but we have no doubt he is a good farmer, in spite of his "planting in the moon," as his bringing up his old field to the production of from 1,300 to 1,400 pounds of seed cotton to the acre proves.

———W. J. B., Allendale, S. C. For the cultivation of Salsify, you require a rich, deep, heavily manured and well pulverized soil. The cultivation is the same as for the beet or carrot. It may be sowed in the fall or very early in the spring. It must grow mainly in cool weather, or it will be tough and worthless. The roots do not grow very large. To prepare for the table, scrape the roots slightly, soak them in water for an hour, and then boil till quite tender. Now let them drain for a short time; meanwhile make a thick batter with white of eggs beaten up with a little flour. Grate the roots tolerably fine, press them into flattened balls of the size of an oyster, dip them in the batter, roll them into grated crackers, and fry them in a pan till brown. Another way is to parboil, cut in slices, and fry either with or without the batter.

———T. H. K., Meridian, Miss. To answer properly all your questions would require pages of the RURAL CAROLINIAN; besides we have long since ceased to advise any one where to go, or to go anywhere. One must decide such questions for himself, after getting what information he can. To grow tropical fruits to advantage, however, it is necessary to go as far South as the Indian River Country, at least. We presume our correspondent Wm. H. Sharpe, Sand Point, Florida, would be happy to give you the light you require. See also a series of articles on Biscayne Bay, by Mr. Whitner, commenced in this number.

———L., Orangeburg. Judging from your description of symptoms, we are inclined to think that the disease from which your fowls are dying is originally catarrh, running in some cases into roup, as it often does. We are sorry to say that we have little faith in any of the remedies proposed for roup, but would remove every diseased fowl from the yard on the first appearance of the symptoms, put them in a clean, dry, comfortable place, bathe their heads with Castile soapsuds or warm milk, and feed them with dough made pretty strong with pepper, mustard and ginger.

———Kate M.: Nothing is easier to grow than larkspur, and we have few more beautiful annuals than the improved varieties; but the seeds must be sown in the fall, and just where you wish the plants to grow. It does not succeed (in this latitude at least) when sown in spring, and it can seldom be successfully transplanted. Planted in September, October or November, it will be in flower in March and April, and make very attractive beds or groups.

———J. L. W. The Large White Norfolk, among the rough leaved kinds, and Skirving's Purple Top Swede, among the Ruta Bagas, are excellent stock turnips. Of stock beets, the best for general cultivation is undoubtedly the Imperial Sugar, (American,) as improved by Lane, but it has not been extensively tried in our climate. Your chemical questions have been referred to our Agricultural Chemist, and will receive attention in our next number.

———J. B. L., Ridgeway, S. C. The "strange grass" about which you inquire, can not be made out from the specimen sent. Many species resemble each other so closely, at that stage of growth, that they are not readily distinguished. If you will send a specimen when in bloom, we shall probably be able to tell you what it is.

———J. K. H., Fort Motte, S. C. We are unable to tell what variety your cotton is, but suspect it to be a hybrid. If pure upland cotton, it is certainly remarkable for length and fineness of fibre, but it can not be accurately graded without a ginned sample,

———J. L. S., Eufaula. The plant you send for name is what is generally known as Buffalo Clover, (*Trifolium reflexum*,) common in many places South and West. We are not aware of any experiments in its cultivation. It may be worth a trial.

———C. B. A., Macon, Miss. It is now too late, we fear, for planting chufas, or for procuring seed. We can not tell you where you can get them at present.

General Notices and Acknowledgments.

The next session of the American Pomological Society, being its quarter centennial, will be held in the City of Boston, Massachusetts, on September 8th, 9th and 10th, 1873. This is one of the most useful Associations in the country, and its meetings are never dull or without results. The next one will be particularly interesting, and should have a large attendance. One of the objects in view, which interests Southern fruit-growers particularly, is the perfecting of the Society's Catalogue in its Southern division, now incomplete. We must all help. Reports and information upon fruits of all kinds may be forwarded to the members of the General Fruit Committee:

R. R. Hunley, Talladega, Alabama; Charles A. Strawn, Rocky Comfort, Arkansas; M. L. Littlefield, Jacksonville, Florida; P. J. Berkmans, Augusta, Georgia; Z. R. Huggins, Glasgow, Kentucky; W. Cunningham, Summit, Mississippi; Joshua Lindley, Greensboro', North Carolina; D. H. Jacques, Charleston, South Carolina; A. Cox, Pulaski, Tennessee; A. S. Lipscomb, Montgomery, Texas.

To the Department of Agriculture, through the obliging Commissioner, Hon. Frederick Watts, we are indebted for a collection of semi-tropical plants for trial in this climate. Among them are some specimens of the Australian Blue Gum, (*Eucalyptus Globulus*,) the Guava, the Cinchona, or Peruvian Bark tree and the Sisal Hemp, (*Agave Sisalina*,) all of which will be subjected to careful experiment, with a view to ascertain their adaptability to this region of country.

Mr. C. L. Allen, the celebrated Floriculturist of Queens, New York, of whose flower-farm we have before spoken, has laid us under obligations by a fine collection of plants. Mr. Allen is in love with his business, and while enjoying it makes it pay in dollars as well as in pleasure. He deserves his success.

Literature, Science and Home Interests.

THE DUCHESNE ESTATE.

PART II.

The events narrated at the close of Part I bring us down to the commencement of our story.

"It does not seem possible that Duchesne deceived us," murmered Madame Rambeau. "What motive? unless he was insane?"

"He drew, or at least he re-wrote his will." said Ninette. "He spelled so horribly, you know; he may have made some blunder."

"And where is Vincent?" demanded Madame, with irritation, "Why isn't he here to attend to his business?"

Ninette burst into tears. The mother looked at her almost angrily. The child, she knew, was not crying about this lost estate, but about that missing lover. What fools girls were, to be sure! Madame was so furious about the imperilled property that she could not find a gentle word for the bleeding heart. Merely saying, "Ninette, don't be a baby," she fell into a solemn reflection. If Vincent did not come back, or if he came back and did not get the Duchesne estate, it would be her duty, she felt, to make a new arrangement for her daughter. Would this Edward Roland do? It is clear enough that Madame had abundant matter for meditation. At last she decided on a double plan; she would follow out one of her proposed roads for a while; then, if it seemed best, she would shift to the other. Leaving her in this forked bewilderment, we will take a glance at the Messrs. Roland and Philpot, much occupied all this while with the Duchesne pullets and maderia, although the estate is not yet settled.

"Hadn't we best be gettin' back to the shop?" asked Philpot, after two or three days of continuous eating and drinking, which Roland called "looking over the property."

"Can't see it," was the answer. "Let the old rum-hole run itself. I'm not going back there to roost. It's a mighty good market up here, and the bunks just fit my backbone. What's the use of going anywhere? The whole business has got to come where I am. If the lawyers want me, let 'em call. I'm comfortable. Ring for another bottle, won't you?"

They drank as usual; neither more nor less; simply all they could. The result was as usual that the flabby Philpot slept on the first landing of the stairway, while Roland was just able to get to bed in his boots and trowsers. The household servants, aristocratically contemptuous of this plebian Stefano and Trinculo, had already learned to minister to them very carelessly, especially in their hours of helplessness. During the night Roland awoke. Every man who has continuously abused his nerves with strong drink, knows the mysterious terrors which come upon the inebriate when he struggles out of his nightmares, amid darkness and solitude. It was not by any means the first time that this precocious debauchee had awakened in such a state of fright that he dared not stir or call out. But this time there was really something horrible present; something which made the roots of his hair shudder, and his skin give out a cold sweat; something which for a moment paralyzed his limbs and his tongue. Vaporous moonlight, falling through bluish gauze curtains, cast a sickly gleam upon a tall, lank and upright figure, draped in a burial white. Its head alone was uncovered; the grave-clothes, drooping upon the narrow shoulders, disclosed a skull; the yellowish cranium, the bleached teeth and cavernous eye-sockets showed with horrible distinctness. It stood by the window, with the stiffness of a sentinel. But at Roland's first start of consciousness, it quitted its position with a slow movement, swept noiselessly to the foot of the bed, and halted there, facing the scared drunkard. Now, for the first time, Roland perceived a phosphorescent glimmer in the hollows of the eyes.

Had the youth been in good health, he would not probably have been shaken overmuch, and he certainly would not have been alarmed superstitiously. But his nerves were disordered by a week's debauch; he was not far removed from delirium tremens; he was hardly sane. During one of those minutes which take more life out of a man than an ordinary month, he was speechless, motionless, paralytic with terror. The spectre stirred; it slid to the corner of the bed; it turned to approach him.

With an effort which filled his hair and bedewed his skin with a perspiration like that of death, Roland threw up his benumbed hands and cried in a squeaking whisper, "Go away!"

It wouldn't go; on the contrary it came nearer; it tried to lie down beside him. In disgust and horror, fearful of being embraced by this mouldering visitant, Roland tumbled to the back side of the bed. Scarcely was he there ere the ghost stood beside him. Back again he bounced, and back glided the spectre. Roland seemed to himself a mass of shuddering gooseflesh on the point of disintegration and dissolution, ready to drop to pieces. If the shrouded tormentor had dipped skeleton fingers into him and taken out handfuls of loose carcass he would not have been aston-

ished. Pieces of him might have rubbed off on the bed clothes without exciting his surprise. Escape at last: he leaped from the bed and ran: bang went his head against door-posts and walls; he never minded it; he flew. At the prospect of safety his voice came to him in the long, shrill scream of a child, which recovers its breath after a fall. Still yelling, he reached the stairway, and fell head-foremost. It was a lucky circumstance for him that flabby, blubbery Jacob Philpot had gone to sleep on the landing. Philpot awoke with a grunt, rolled somebody or something off his stomach, tumbled down the remaining stairs after it, drew his revolver and commenced firing. What was the matter he did not know, but his instinct led him to have immediate recourse to his shooting-iron, and he blazed away in the darkness like a platoon. It seemed to him that a dozen people got off him and ran away screeching. His last ball brought down a glass chandelier in the parlor, with a crash which nearly bereft him of his low down senses. Then there was silence; next a tumult of negro voices; servants bearing lights flowed into the hall and thus the scene ended.

Roland reappeared next morning, with the stains of earth and herbage on his back, showing how he had passed the close of the night. At the breakfast-table there was a period of sulky silence. Roland kept one eye shut; sometimes the right, sometimes the left; the open one always glaring at Philpot. The doughty countenance of the latter had an expression like that of a dog who discovers that he has attempted to bite his master, mistaking him for a stranger.

"I say, old porpus chops, you come mighty near finishin' me last night," began the heir of the Duchesne estate.

"I didn't know it was you," returned the victim of rum dropsy, with a bestial humility. "I'd a shot myself sooner than fired at you."

"Oh, you would, would you?" said Roland, with a squint of harrowing incredulity. "Let's see you do it next time. I wouldn't mind if you tried it on now. Don't hold it on my account."

"How could I know who was thar? pleaded Philpot. "You mounted me in the dark like a bag o' cotton. Got your boot in my mouth the first lick. I thought the niggers was insurrected."

"Somethin' got into my room last night, and wanted to light on me."

"Lik enough niggers. Was it black?

"No, it was white—whiter than a gravestone—had a skull and grinned at me. By Jiminy! I sweat all my whiskey out of me in less 'n a minute."

"Look a here, Roland," implored Philpot, jest keep an eye on yerself. I'm afeared it was the man with the poker."

"I don't go it half so hard as you do. Why, I got to bed last night, and you keeled up on the stairs."

"Yes, I know. But it don't matter about me. Now you, jest come into this property, you'd be a heavy loss to yerself. Let's try, jest for a day or two, to stay sober. Don't let's get outside of more 'n a bottle apiece, and that plain whiskey. These wines and mixed drinks are bad for the health."

"One pint. Let's have a temperance society Tell old Tom to give us our two bottles, and lock up the rest and hide the key."

It was done. All day these two teetotallers suffered with thirst on their quart apiece. At evening, sober, wretched and desperate, they extorted the key of the wine-vault from Tom, and drank themselves a trifle drunker than usual. It was long past midnight when Philpot went under the table, an indistinct mass of snoring pulp, much in the state of a stranded jelly-fish, and not greatly differing from one in features and expression. With his two hands on the board, as if about to address an audience, Roland struggled to his perpendicular, turned himself as slowly and carefully as if he were a crate of china, and set off lurchingly for his bedroom, one eye sagaciously open. At the stairs he halted, the ascent looked a mile high, and straight up at that, moreover he was vaguely afraid of the ghost. A little before he had not wanted assistance, but he thought he should like some niggers.

"What those fellahs gone to bed for? Why don't they set up for me? I'll teach 'em their business. I'll light on 'em."

Such were his reflections, and such he supposed were his words, as he zigzagged from wall to wall toward the rear of the house. It was a spacious edifice in reality, and to Roland it now seemed illimitable. Moreover, the footing was unsteady; the floors keeled up before him and behind him, it was like walking a deck in a storm. After a laborious and eventful journey, he found a back door, strove obstinately with it, swore at it and got it open. Stepping into a piazza, faintly illuminated by starlight, he fell over something. A nondescript! wrapped in loose drapery, a pack of unassorted, scrabbling legs and arms, a mysterious monster, soft in some spots and tough as timber in others, a most clamorous monster, too, squealing and bellowing in various voices. Suddenly invigorated by terror, Roland grappled with it, rolled over it, went under it and lost himself in the middle of it. Among the amazing members of the creature there seemed to be one wooden one, which was particularly hard on him, grinding his shins, mashing his nose and pinching his fingers.

"H-o-o!" howled the caitiff, "who dat fightin' me?" Hi yah! Jumboloro got you. Now guess you catch it. H-o-o-o!" And then

followed a burst of goblin laughter, "Wah, wah, wah."

After a fierce struggle they tumbled apart and rose. There was a brief pause for breath, during which they faced each other in silence, like two game-cocks. Then the monster began to dance; squeaking and bellowing and tossing its drapery, it capered about Roland; legs and arms, or perhaps fins, of various lengths, went out and in marvellously; now and then it stamped with what sounded like a hoof.

Roland had made a tolerable fight thus far, but this demonstration was too much for his whiskey-rotted nerves, and he undertook to retreat. The moment he faced about, down came the nondescript's head, there was a miscellaneous charge of legs and fins and hoofs, one awful butt, and the drunkard was on his face. He rolled over on his back just in time to witness a new horror. With a rush of drapery a white object passed through the piazza and into the hall, where it turned and revealed a skeleton head, the eye sockets faintly blazing. Uttering a simultaneous shriek, the late combatants skedaddled in any number of different directions. The last sound which Roland heard was that awful hoof going from him through the darkness. For the second time in forty-eight hours he passed the night out of doors. By afternoon of the next day the house servants were full of stories about ghosts, vondoos and obis. There was an influenza of fright on the place, everybody caught it, and had it badly, like a second attack of measles; niggers and white folks, they were all laid up with it.

"I say, I never believed in ghosts before," observed Roland to the chalky-faced Philpot. "But hanged if it don't begin to smell pretty strong of 'em. What's to be done, old porpus chops?"

"Better quit till the 'state is settled. Reckon it ain't quite squar, this livin' on a dead man afore the lawyers is done with him. Told ye, 'n the fust place, didn't feel easy about it."

"What would the boys say to hear we was scared out by ghosts?"

"Boys be cussed: If they say anything, ask 'em to settle thar bills."

"I guess I won't go till I've inquired into the character of this old institution among the neighbors," decided Roland. "Have up some horses, Philpot. We'll ride round."

The Rambeau house being the nearest, they made their first visit there. Philpot, like a meek lowdowner, as he was, wanted to stop in the hall, but Roland nudged him, trod on his toes and winked at him authoritatively, and the two entered the parlor together. With a slight flush in her pale, massive face, Madame Rambeau rose to receive the heir of the Duchesne estate. Her eye was very investigating, she was querying whether the young man would do, she glanced to see how he was received by Ninette. A very politic and a slightly greedy lady was Madame Rambeau. Ninette answered the awkward bow of Roland by a cold inclination of the head, and without rising. Even Madame found the young man "horrid," could hardly conceal her dislike of his gashed lip, sore nose, swelled face and plug-ugly manner, began to feel that he could not by any possibility be made to do. Still, she had told Ninette to treat him decently, in case he should call; she had tried to hint to her that a fortune is to a husband what sugar is to a pill, and she was secretly wrathful at the girl's averted face and chill demeanor. Daughters have so little sympathy with the troubles and anxieties of mothers! Daughters, in short, are so hardhearted! So felt Madame.

"My name is Roland," said the legatee, advancing with one moist eye closed and the other fixed on Ninette. "And this is my friend and bar—my friend, Mr. Philpot."

"Have the goodness to sit down," replied Madame Rambeau. "But why call yourself Roland? The name should now be Duchesne, should it not?"

"You're right, ma'am. Duchesne. That's the will. That's so. But I haven't got used to it yet. New thing."

"Ah! but you are so well paid for it!" smiled the lady. "The Duchesne estate is worth a name, even an aristocratic one, like yours."

"Heavy old estate," admitted Roland. "Big thing."

Madame's eyes flashed—this coarse, stupid boor was intolerable, she wanted to hurt him.

"Are you descended from the great Roland—the Roland of Charlemagne?" she asked. "He was mad, you know. I hope brain affection does not run in the family."

Roland had not a suspicion that he was being satirized; her sneer, smothered in smiles, was to him quite impalpable. Moreover, not being a student of Ariosto, he was puzzled by her allusion to Orlando Furioso. He glanced askant at Philpot for guidance. But that worthy, overwhelmed by the presence of "high-toned" people, sat meek and speechless on the edge of his chair, his napless hat between his greasy knees and his white eyes fixed on the floor.

"You beat *me*, ma'am," confessed Roland. "You do beat me *bad*. I don't know whether I'm descended from the old chap or not. Was he much mad?"

"He entirely lost his wits, and they had to be sought for in the moon," said Madame, gravely.

"The devil!" muttered Roland, turning a glance of bewilderment upon Philpot. The latter slightly elevated his colorless eyes, and whispered out of one corner of his tobacco-stained mouth, "Some vondoo business, I reckon."

"Queer country, anyway, ma'am," continu-

ed Roland. "My old house over there is haunted, or somethin' like it."

"Ah! is it?" answered Madame, calmly. "But, of course, it is. I knew it."

"The what's-his-name you did! How long has it been so?"

"About fifty years."

"What? and old Duchesne lived there all the while?"

"But it killed him at last, you know."

"I say, Philpot, that's what made the old boy drink so," whispered Roland, opening both his eyes with a start.

Philpot, wiping the perspiration from his putty-colored face, responded with a groan of assent and dismay. After some further conversation the visitors departed.

When the door had closed behind them, Ninette spoke for the first time since their appearance.

"Mamma, how could you tell them that the Duchesne place has been haunted?"

"I meant," replied the mother, "haunted by vice."

"Ah! but that is too bad on our poor old friend. I am sure he was good when he cried over Jeanie Deans."

"Besides, I want that brute to be driven away," continued the elder lady. I want time for Vincent to be found, and to arrive. Every day that this creature stays strengthens his claims to the estate. Possession, I have always heard, is nine points of the law."

Thus, in her womanly and dense ignorance of law, talked Madame.

What with the skeleton-headed apparition, and his drunken fight with the equally drunken Jumboloro, and Madame Rambeau's adroit hints of ancient hauntings, our friend Roland went home convinced that the Duchesne place was no fitting residence for human beings.

"Hanged if I don't travel to-morrow!" he said to Philpot, as they ambled along. "And before I come back, I'll have a new house built. I ain't goin' to live in a grave, with ghosts and vondoos, Philpot. It ain't my style. It never was, and I ain't goin' to begin it now, you bet your pile on it."

That evening, Ninette, alone in the Rambeau veranda, was pondering and, perhaps, crying over the question, "Where was Vincent?" The Duchesne estate was now a matter of minor consequence to her, so overwhelming was her anxiety as to the fate of the man she loved. Not a word from him for three weeks; no reply to letters of inquiry sent to Mobile. It was insupportable, it was horrible.

Presently there was an outburst of joyful shrieks and bellows from the greenery, near the gate; and in another moment Jumboloro appeared in the shadowy pathway which led up to the mansion. The bacchanalian old faun was outdoing himself; it seemed as if his sound leg would run away from his hobbed one, and dismember him; his raiment waved, his stick slashed the orange branches, and the whites of his eyes illuminated the evening.

Prancing, jerking, snorting and squeaking up to the veranda, he bellowed, "H-o-o-o! This time he come. Mas'r Henry Vincent! Here he be for sure. Jumboloro tell you both times. Wah, wah, wah."

Strong desire is always ready to take the wings of hope, and carry us aloft. Ninette sprang to her feet, with the cry, "O, Jumboloro! is it true?"

Then, seeing another figure coming up the walk, she rushed down the steps, ran through the flower-scented gloom, and threw herself into eager arms.

"My darling! my goddess! my glorious beauty!" whispered the stranger, turning her head back to look into her face.

After a time, no doubt pleasantly filled, there came a moment when she was able to say, "Oh! what has kept you so long?"

"I am ashamed to tell you," he answered. "But I may as well make a clean breast of it. Such a thing shall never have a chance to happen again. I was invited to a bachelor supper in New Orleans. After supper, as I was going home, or going somewhere, I don't know where—pardon me, my dear child; I assure you it is the last folly of the kind. Well, I didn't know what happened till next morning. But then I found myself on a vessel dropping down the river. They told me that I had shipped myself for a common sailor. I don't believe it. I believe that I was kidnapped while I was asleep. You will forgive me, won't you?

"What an outrage!" exclaimed Ninette. "The wretches ought to be punished."

"Well, I made a row, as you may suppose. After a few days I frightened the captain, and he took me into the cabin. Finally, we met a vessel bound for New Orleans; and so, instead of visiting Havre, here I am. You are not angry with me? You don't despise me, Ninette?"

"Oh, Henry!" she sighed, lifting her face to worship him.

"You are sufficiently punished," she said, presently. "You have lost the Duchesne estate. But I ought not to have told you so suddenly," she added, tenderly. "Don't mind it. We shall not need it. We can be very happy without it."

"You dear child," he whispered, caressing her hand. "Tell me the whole story."

"It has gone to a hideous little wretch—a barkeeper, or something of that sort—who calls himself Edward Roland. Oh, there is no donbt about it. The will said Edward Roland. Nobody comprehends; but so it is."

"My name is Edward Roland," he answered, with a smile.

"Henry! what do you mean?" she ex-

claimed, stepping back from him. "Who are you?"

"Now, I have got to tell you another bad affair, and this time you will be really angry," he stammered. "It was a duel."

"Oh!" answered Ninette, in a tone of relief.

"I was a second," he continued. "One of the principals was killed. So the authorities of Mobile got out warrants for all the parties concerned. I was not to blame. I had tried to bring about a peaceable settlement. Still, I didn't want to be arrested. So I ran away. I took the name of Henry Vincent, and lived for a while in Carrollton. Then I came up here to visit my father's old friend Duchesne. That is the whole mystery, Ninette. Are you angry with me?" If she was angry she did not show it in the usual way, for she let him seize her hands once more.

"I knew about this other Roland," he added. "Duchesne knew him, too—used to drink at his place. But he probably never heard him called anything but Ned. I heard of the fellow's claim in New Orleans, and have seen my lawyer about it. The will is badly worded, of course; but my right can be maintained. Your mother is a witness as to what Roland was meant."

Some weeks after Edward Roland, the barkeeper, had been dispossessed by Edward Roland, the gentleman (now Duchesne), the conversation at the Rambeau dinner-table turned on the ghost of the Duchesne mansion.

"Perhaps I had better explain," said Madame Rambeau. "It was a little trick of my own. Cato here managed it admirably."

Cato grinned from ear to ear, and went on serving the table.

"What was the use of it?" demanded Ninette.

"Well—it was soothing," answered Madame. GALAXY.

JUNE.

Awake, my Muse, thy tuneful lyre,
And sing thy sweetest, tend'rest strain—
My mind with beauteous thoughts inspire,
For rosy June hath come again—

Bright June with azure skies serene,
And fields that promise rich increase,
And murm'ring brooks and meadows green,
And whisp'ring winds and smiles of peace—

With cosy nook and greenwood bowers
Where lovers find their trysting place,
And bees and butterflies and flowers
Which linger in her kind embrace—

With pleasure parties and maroons,
Where boys and girls of gladsome mien
Dance to the soft delicious tunes
Of viol, lute and tambourine:

While stately men and gentle dames
Along the velvet sward recline,
And watch the brisk fantastic games
Played by the vot'ries of the Nine.

Their limbs to quietude they give,
(No devotees of Terpsichore,)
But in these merry plays they live
Their well remembered youthhood o'er.

And children, flanked by turbaned maids,
Released from nursery and school,
Twine posies in the fragrant glades,
Or roam amid the woodland cool—

With gay craft on the river's tide,
In some historic, classic scene,
Bedecked with pennons flutt'ring wide
Beneath fair Luna's silver sheen;

While music from some martial band
Floats on the air melodiously—
Re-echoed by the sturdy land,
Till lost upon the silent sea—

Of all the months she is the queen,
The favorite of the rolling year—
Fair visitant from realms unseen,
The mournful ills of life to cheer.

When Adam wept at Eden's gate,
And Eve moaned with a soft despair,
God sent them June to mitigate
The lot that seemed to them so drear.

Now drowsy night her mantle throws
O'er forest glade and well tilled plain,
And restful sleep benignly grows
On tired limbs and weary brain.

Kind Nature, thy serene repose,
To mortal man divinely given,
Is type of that sweet rest which flows,
Along the love-lit scenes of Heaven!

I lean against the balustrade,
And smoke my thoughtful pipe till late,
And watch chaste Dian's stately maid
Traverse the skies with queenly gait.

I list the timid Whippowil
Pour forth his sad, mellifluous song,
Whose notes re-echoing o'er the hill
Make music all the night along.

The mock-bird thrills his joyous air,
The beetles buzz against the pane,
The rabbit quits her cosy lair
To feed and gambol on the plain.

The owl sends forth his trumpet call
From lonely glen or dark lagoon,
While o'er the tree-tops rise and fall
The mutt'rings of his dreary tune.

I watch the constellations pass,
In slow, majestic promenade,
While frogs, within the dank morass,
Keep up their dismal serenade;

The Lion glows along the West,
Bootes and Lyra both adorn
The midnight skies, while Virgo's crest
Lifts zenith-ward before the morn;

Great Ursa points the Polar Star,
Old Taurus sinks his glitt'ring horn
Behind the sun-set waves afar
From the dim lights of Capricorn:

Orion's slow-receding beams
Are hid behind the horizon,
But South of east are seen the streams
Of astral light from Scorpion:

With astronomic interest brisk,
My eyes pursue th' empyrean track,
To where Mars wheels his firey disc
Along the star-gemmed zodiac!

And Jupiter the evening star,
Splendid, majestic and serene,
Looks thro' the intervening air
Upon this lovely Southland scene.

I think of Him whose hand upholds
These beautiful revolving spheres,
Whose august, quenchless eye beholds
The reach of everlasting years!

My lips grow mute; astonishment,
Awe, rev'rence, gratitude arise,
And my full heart is eloquent
With thoughts of Him who rules the skies!

O, thou, along whose leaf-crowned hills
And verdant valleys now appear
The sweets triumphant June distills,
Deal gently with our hopes this year.

Incite our generous Southern soil
To yield its richest, amplest store,
And bless the faithful plough-man's toil
With bounteous harvests as of yore;

So shall we praise Thy holy name,
And turn our thankful hearts to Thee,
Till freed from doubt and guilt and shame
We reach a blest eternity!

W. Fletcher Holmes, M. D.

Barnwell, S. C., May, 1873.

HOW CHROMOS ARE MADE.

Probably, very few, even of those persons who are generally well-informed, have the slightest conception of the various processes by which those wonders of modern imitative art, popularly known as Chromos, are gradually developed, step by step, to a perfection which almost defies discrimination in comparing with the original. The lithographic, or stone process, is that generally used in this country; but having been found too slow, and inherently defective for rendering some of the most delicate tints, great efforts have been made to find a substitute by which a higher degree of perfection could be attained, and the superior productive capacity of relief substituted for the uncertainties and delays of surface printing. Many years ago, Mr. Charles Stahl, a lithographic engraver of high repute, directed his attention to this subject, and, after years of patient and enthusiastic devotion, he has overcome all difficulties, and has so perfected his process as to insure a complete revolution in the art of color printing.

The pictures to be copied is covered with a trensparent sheet of oiled-paper, on which a tracing of every outline is made. This outline is then transferred to a lithographic stone, known as the "Key." A number of plates, equal to the number of tints desired, is next prepared, and an impression from the Key is printed on each. With the original before him, the artist fills in with a crayon, such portions of the outline on each plate as he wishes to have reproduce the particular shade assigned to it.

The untouched portions of the plate are then covered with a peculiar preparation, and a galvanic bath nicely governed, does the work of an engraver, but does it as no engraver could possibly do it—true to a hair, and finer, if necessary, than the naked eye can discover. Each plate is printed in its turn on the paper, and every impression must be so adjusted to its predecessors, that there shall not be the slightest variation.

When it is considered that as many as twenty or thirty plates are often required—some portions of a tint are preserved pure to the end, while others are covered and affected by one, or all succeeding impressions—the marvellous skill and knowledge of various combinations of color required of an artist who essays to lay out and complete the plates for a Chromo, may be faintly imagined by those who see and admire the splendid results of his labor.

A Eufaula man is preparing to patent a valuable mosquito-bane, which is said to be a perfect protection against that troublesome insect. It is in the form of a powder, and when touched with a lighted match it flashes and fills the room with a thick smoke which at once drives every mosquito from the premises. It also drives the people out as promptly as it does the mosquitoes, which is a slight defect that the inventor hopes to remedy in a few years, making it the subject of a new patent.

For Our Young Folks.

A CURIOUS ANIMAL.

"What a funny-looking creature, with a whole lot of little ones, tied on to his tail! Just see, papa! Was there ever anything so curious?"

"I guess they're not exactly tied on, Benny. If you'll look closely, you'll see that the ends of the little tails are only curled around the big one."

"Is it their mother, papa?"

"Yes."

"And is that the way she carries her little babies about on her back?"

"Yes, until they are big enough and strong enough to take care of themselves."

"Well, I do declare! It's so funny!"

"Not funny; that isn't the word, Benny."

"Well, curious, then, papa."

"That's better; or remarkable; or even extraordinary, which means unusual or out of the common order of things. We should always try to use the right words in the right places."

"Thank you, papa; I'll try and remember. But what is the name of this curious animal?"

"It's name is opossum."

"Not the opossum I read about last week? nor the one I saw stuffed at the museum papa? That had a great pouch in which it carried its little ones."

"No, this is not the large Virginia opossum about which you read; but a little fellow not bigger than a rat, having no pouch to carry its young while they are too small to run about and take care of themselves. So the mother lets them crawl upon her back and twine their slender tails around hers, and cling with their feet to her soft fur; and thus carrying her family of little ones, she climbs the trees and goes about through the woods and fields in search of food for them."

"Isn't it wonderful, papa, that she should know just how to take care of them? And isn't it wonderful, too, that the tiny little ones should have sense enough to get up on her back and curl their tails around hers?"

"Yes, Benny, it is very wonderful. But every animal, even down to the smallest insect, knows, when born, how to take care of itself. Only man is helpless and ignorant. But then animals do not grow wiser as they grow older, while man, from babyhood to the latest days of his life in this world, is continually learning; and if he live in obedience to the laws of his Father in heaven, will become an angel, and grow wiser and happier forever."

I'm glad I wasn't born a 'possum."

"Well, you may be, Benny; for animals have no reasoning and immortal souls, and no glorious hereafter. They are born; they live a few months or years; then they die, and that is the last of them. But the years of man are eternal."

Benny drew a long breath and looked very serious. The thought that he would live for ever and for ever made him feel quite sober for a few moments. But, glancing at the picture again, he asked,

"In what country does this opossum live?"

"In the warmer parts of North America. The larger opossum, with the pouch in which it carries about its little ones after they are born, is found in Virginia, Maryland and most of the Southern States, where it is shot or caught in traps and used as food."

"What does playing 'possum mean, papa? The other day Harry Jacobs and I found a curious bug, and when we touched him he curled up like a ball, and there didn't seem a

bit of life in him. 'Oho! you're only playing 'possum,' Harry said, and punched him with the end of a stick. But we couldn't make him stir. I guess he was dead."

"No, he was only playing 'possum, as Harry said."

"Only pretending to be dead?"

"Yes."

"Does the opossum do that?"

"Yes. When caught it will pretend to be dead; and though kicked and beaten, show not the smallest sign of life."

"Why, papa?"

"I think Benny might guess."

"Oh, now I see! He wants a chance to get off."

"Yes; and many a one has got off through pretending to be dead. But their trick is well understood, and in order to make sure of them, if there is water near by they are thrown in; there is no pretence after that."

A FATHER'S LESSON TO HIS SON.

One day Robert's father saw him playing with some boys who were rude and unmannerly. He had observed for some time a change for the worse in his son, and now he knew the cause. He was very sorry, but he said nothing to Robert at the time.

In the evening he brought from the garden six rosy-cheeked apples, put them on a plate and presented them to Robert. He was much pleased at his father's kindness, and thanked him. "You must lay them aside for a few days, that they may become mellow, said the father, and Robert cheerfully placed the plate with the apples in his mother's store-room.

Just as he was putting them aside, his father laid in his plate the seventh apple, which was quite rotten, and desired him to allow it to remain there.

"But, father," said Robert, "the rotten apple will spoil all the others."

"Do you think so? Why should not the fresh apples rather make the rotten one fresh?" said the father. And with these words he shut the door of his room.

Eight days afterward he asked his son to open the door and take out the apples. But what a sight presented itself! The six apples which had been so sound and rosy cheeked were now quite rotten, and spread a bad smell through the room.

"Father!" cried he, "did I not tell you that the rotton apples would spoil the good ones?" You did not listen to me. "My boy," said the father, "have I not told you often that the company of bad children will make *you* bad, yet you don't listen to me. See in the state of the apples that which will happen to you if you keep company with wicked boys?"

Robert did not forget the lesson. When any bad boys asked him to play with them he thought of the rotten apples, and kept himself apart from them.

NO ROSE WITHOUT A THORN.

One fond heart, and only one,
One bright smile ere work's begun,
One sweet welcome when 'tis done,
And I'm weary;
One fond heart to cheer my life,
When I weary of the strife,
Have I in my little wife—
Bonny Mary.

But my rose conceals a thorn,
Paining ever, night and morn;
And our life of bliss is shorn
By another.
Day and night upon our hearts
Sits a shadow, and imparts
Misery, in fits and starts:
Mary's mother!

WALTER SEDWIN.

WHAT MAKES A HOME.

I never saw a garment too fine for man or maid; there was never a chair too good for a cobbler, or cooper, or king, to sit in; never a house too fine to shelter the human head. These elements about us, the gorgeous sky, the imperial sun, are not too good for the human race. Elegance fits man. But do we not value these tools of house-keeping a little more than they are worth, and sometimes mortgage a home for the mahogany we would bring into it? I had rather eat my dinner off the head of a barrel, or dress after the fashion of John the Baptist in the wilderness, or sit on a block all my life, than consume all myself before I get to a home, and take so much pains with the outside that the inside was as hollow as an empty nut. Beauty is a great thing, but beauty of garments, houses and furniture is a tawdry ornament compared with domestic love. All the elegance in the world will not make a home, and I would give more for a spoonful of real hearty love than for whole shiploads of furniture, and the gorgeousness that all the upholsterers of the world could gather together.—*Theodore Parker.*

SCRAPS OF HUMOUR.

——If Portuguese girls want husbands, it seems to us that they ought to marry Michiganders.

——A pair of boots in Iowa costs just two loads of potatoes, and to raise the potatoes just wears out a pair of boots.

——A couple of deaf-mutes in Atlanta, Ga., acting on the motto, "Dumb vivimus vivamus," were lately arrested for creating a disturbance in the public streets.

Notes and Memoranda.

SCIENTIFIC MEMORANDA.

A Small Pox Preventive.

At a late meeting of the Alabama State Medical Association, Dr. G. D. Norris stated that during the prevalence of small-pox in Huntsville certain families at the instance of some one unknown, had resorted to the free use of the *tea of the Cimicifuga Racemosa*, or black snake root of the United States Pharmacopia (*black cohosh*) *as a preventive of small-pox.* In the families using the cimicifuga there occurred no case of small-pox; though some were exposed to the disease. In the same families, Dr. Norris vaccinated the members, but without effect so long as they continued the use of the cohosh; after ceasing to use the tea as a prophylactic, he again vaccinated them, when the specific effects of the vaccine virus were produced. He submitted the results in these cases as new, and not without interest to the profession.

Moonlight and Vegetation.

According to M. P. Charbonnier, in the *Journal d' Agriculture Pratique* lunar light exerts a material influence upon aquatic vegetation. This fact was first noticed from the increased growth of cryptogamic vegetation upon the sides of an aquarium. It was observed that during the time of full moon it was much more luxuriant than during the time of the new moon. This led to other observations with regard to it, and it was found that aquatic vegetation generally is affected in a similar manner.

The Weather above the Clouds.

M. Tissandier states that in a late balloon ascent from Paris he reached a hight of 6,560 feet above the earth, where, having passed through layers of clouds, he found a bright, sunlight sky and a temperature of from 63° to 65° Fahr. When descending and re-entering the clouds, which were in a highly electric state, the temperature decreased to 27° and the balloon was surrounded by small crystals of ice.

One of the floral novelties of the season is a new bedding-plant known as *Salvia splendens alba compacta*, or in plainer language, a white variety of the common scarlet sage.

LITERARY NOTES.

We are pleased to note the reappearance in the field of medical literature of the *Charleston Medical Journal*, edited and published by those well-known physicians of Charleston, F. Peyre Porcher, M. D., and R. A. Kinloch, M. D., both distinguished in their profession, and experienced as medical writers. The number before us will compare favorably with any medical journal in the country. [Quarterly, $3 a year.]

Ladies who desire to keep up with the rapid march of fashion, (a pretty difficult matter, we should say in these times,) will no doubt be glad to know that they are invited to send for a specimen copy, of "Fowler's Bazaar," a journal of "Fashion, Literature and Art," [Abbeville, S. C. $1 a year.]

"Annie Maylie," is the title of a juvenile book of more than common merit, published by D. Lathrop & Co., Boston. It is a story of earnest religious work, and is pervaded by a spirit of sweetness and pathos which must touch every heart. We heartily congratulate the fair author on her success.

"Half Hour Recreations in Popular Science," is the title of a series of interesting and valuable manuals, published by Estes and Lauriat, Boston. For sale by Edward Perry, Charleston. No. 9, "Geology of the Stars," has just been received.

Messrs. J. B. Lippincott & Co., of Philadelphia, have published in a handsome form the lyrics of Pearl Rivers; many of them have appeared in the New Orleans *Picayune*. The poetess is a native of Mississippi.

Miss Nettie Houston, daughter of ex-President Houston, and authoress of "Mignonette Leaves," a most beautiful collection of poems, was in Austin lately.

A new work from Darwin, on "The Evil Effects of Interbreeding in the Vegetable Kingdom, is forthcoming."

Mrs. Macquoid, the author of "Patty," has in press a new novel, called "A Study of a Girl's Heart."

PERSONAL NOTICES.

John R. Thompson, who was for many years editor of the *Southern Literary Messenger*, and has more recently been connected with the *Evening Post*, of New York, died at his residence there, April 30, of pulmonary consumption. He was a native of Richmond, Virginia.

——Henry L. Davis, of Savannah, Ga., has just had returned to him by mail a bible which was taken from him when he was captured in the charge on Fort Saunders, at Knoxville, Tenn., nearly ten years ago.

——Colonel Fitz W. McMaster, of Columbia, S. C., will deliver the anniversary oration before the literary societies of Erskine College, at the next Commencement.

——Baron Justice von Liebig, the distinguished chemist, whose discoveries in Agricultural chemistry almost revolutionized the husbandry of the civilized world, died on the 20th April.

—— The two American poets laureate, Longfellow and Bryant, have been elected honorary members of the Academy of St. Petersburg.

MERE MENTION.

Three new cotton factories are building at Columbus, Ga., all to be finished by 1875.

——Every spindle in a cotton factory will earn $5 for each farmer in the vicinity.

——A French journal asserts that the average annual sale of bouquets of violets in Paris is 5,825,000.

——A large tract near Tuscumbia, known as the Dishler lands, has just been purchased for a new German colony. They will commence settling and improving it immediately.

——Five hundred bales of cotton were grown in California last season, and all of it was sold to the Mission Mill to be worked up at home. It is proposed now to raise a larger amount the present year. That is the way to make cotton pay.

——Col. Edward Wilkins, of Kent County, Md., has planted an orchard of 15,000 peach trees, all of one variety—the Early Beatrice. This is a new peach, one of those originated by Mr. Rivers, of Sawbridgeworth, Eng., and is very early, ripening in that latitude about the 10th of July.

——Dummet's Orange Grove, South Florida, produced 600,000 oranges last season, and he expects to have 1,000,000 this year. Three or four years ago the trees were nearly destroyed by insects, but they have fully recovered and look finer than ever.

——The largest sugar planter in Cuba has three estates each worth $1,500,000. He came from the old country not worth a dollar, and now he has a hand in almost every enterprise. He pays a head overseer $2,000 a year, but would be glad to pay $10,000 could he get as good a one as himself.

——The four States of South Carolina, Georgia, Florida and Alabama, are compelled to buy about 50,000,000 bushels of grain from the Northwestern producers every year. For this they pay on an average nearly $54,000,000. But of this amount the Western grain growers get less than $16,000,000. The $38,000,000 which the people of the consuming States pay over the amount realized by the producer is divided among different transportation companies.

RECIPE.

Flaky and Short Crusts.—In making a flaky crust, a part of the butter or lard should be worked with the hand to a cream, and then the whole of the flour well rubbed into it before any water or milk is added. The remainder must be stuck on the paste and be rolled out. For crisp crust, by far the most wholesome, the whole of the shortening should be rubbed in and thoroughly incorporated with the flour. Water or milk must be added when this is done, and the dough, or rather paste made up. The pie-board and rolling-pin should be well dusted with flour, and the dough should be well beaten with the pin, to thoroughly mix it and render it light. In rolling out the paste, do not drive the pin backward and forward but always keep rolling from you. In making flaky crust, the paste must be rolled out thin and the butter laid all over it; then roll it up and beat it till it puffs up in little bladders; it should be then rolled out and put in the oven as quickly as possible.

A colored gentleman went to consult one of the most conscientious lawyers, and after stating his case said: "Now Mr. ——— ——— I know you's a lawyer, but I wish you would please, sir, just tell me de truff 'bout dat matter."

Troth's Early Red Peach.

THE

Rural Carolinian.

Progress with Prudence, Practice with Science.

D. H. JACQUES, Editor.

Vol. IV.] CHARLESTON, S. C., JULY, 1873. [No. X.

Thoughts and Suggestions for the Month.

As the planter approaches the end of his crop-making operations, he sometimes permits himself to become a little remiss in his exertions or in his vigilance, and the "laying by" is less carefully done than the previous cultivation. This is a great error. The last working, (though it may be light, if the previous ones have been thorough) should be done with extra care, so that the field may be left clean and in full possession of the crop and nothing else. Corn must be kept clean till the blades meet across the rows, then laid by, sowing peas broad-cast at the last working. These will shade the ground and furnish a good crop of peas, or of pea vine hay, or an excellent green manure to turn under. It is not well to stop the ploughs and hoes in the cotton too soon, but when you find that the sweep will not much longer be able to pass without breaking the branches "lay by" with a careful working. Then, and not till then, consider your duty in the way of cultivation done. You want hay, but the cotton field is not a good place to make it. One crop at a time is the rule and cotton, unlike corn, requires the whole season.

———As partial exceptions to the rule of one crop at a time, we advise peas with corn, and in some cases the small grains with cotton, as they make most of their growth after the original crop has ceased to require the soil. Oats may be sown at the last working of the cotton, no extra labor being required, except the broadcasting of the seed between the rows, in advance of the ploughs; but oats sown so early in the season require to be fed off before the final picking of the cotton, to prevent them from prematurely throwing up the seed stem. Sheep do this work, with great benefit to themselves and with no damage to the cotton, provided, of course, that they are turned out as soon as the oats are well cropped. Wheat, sown later, requires to be covered with the plough or cultivator. During the winter, the cotton stalks must be broken down, when the grain will have full possession of the field. This plan has been found to work well, when the land has been in good condition and is worthy of a more extensive trial, where labor and mule-power are scarce; but it does not permit that thorough preparation of the land necessary to the best results in small grain culture.

——— Can the cotton worm be circumvented? Our correspondent, Dr. Anderson, thinks so, and has a plan perfected for accomplishing that end, which, we trust, will in due time, and under conditions which will enable every planter to try it, be given to the public. Prof. C. V. Riley, State Entomologist of Missouri, also thinks the planter may successfully fight this public enemy, and his proposition has been made public in an essay read before the National Agricultural Congress, at its late session in St. Louis. It consists in the use of Paris green, in the same way as for the potato beetle. The least possible dusting of this mixture upon the plants, he says, will be the means of destroying all the worms upon them, without the least injury to the plants themselves.

——— Can Paris green be safely and effectually applied to the destruction of the cotton worm? Paris green, or Scheele's green, contains a varied proportion of arsenious acid, and is a deadly poison; but the manner in which it may be used to counteract the cotton-worm, renders it perfectly harmless. If the green be pure, it may be mixed with 30 parts of flour, plaster, slacked lime, or ashes, and still be thoroughly effective. It is best dusted on to the plants early in the morning while they are moist with dew. An old sleezy sack, such as those used for table salt, will do good service, when attached to the end of a stick. It is most safely applied, however, by aid of a perforated tin box attached to the end of a stick three or four feet long. It should be tried.

———Those who are not yet prepared to abandon fodder pulling should endeavor to so time the operation as to give the best results attainable—that is, get a good article of fodder, with the least possible injury to the grain. If you pull too early the corn will suffer badly; while if you wait too long, the blades will be of little value. The grains should have begun to harden, to say the least, before a blade is removed. The time is coming when we shall wonder that anybody ever committed the absurd folly of pulling fodder.

———Sweet potato draws and cuttings of vines may still be put out in this latitude, but do not delay this work, as it will soon be too late for a crop. In working the sweet potato crop, avoid covering the vines; many, we are aware, take pains to cover the vines, thinking it increases the crop, but *there can be no greater mistake.* Prevent them from taking root between the rows by lifting the vines now and then, especially after heavy rains; or, better still, if practicable, mulch the ground heavily, between the rows and thus prevent the vines from taking root.

———Turnips should be largely planted. Prepare the land thoroughly and manure heavily, and you may make your first sowing about the last of this month; and, if it fail, you can try again in ten days, and so on, till a stand is obtained; but August and September are generally better months for sowing the main crop.

———Hay is a most important and too much neglected crop. Make all you can, and prepare to make more next year, by getting some suitable land into grass. Cow peas may be sown broadcast, as a separate crop, for hay. From a bushel to a bushel and a half per acre will be a sufficient seeding.

Ploughing and its Effects Upon Soils.*

There are two points in which I conceive our practice of agriculture has been particularly deficient. These are winter preparation and modes of ploughing. With many it has been customary to allow the spring to be far advanced, or at least the winter to be pretty well spent, ere the process of preparation begins; indeed, this is merged in that of cultivation, and the corn is growing ere the land is broken up, and the cotton is up on part of the plantation before the earth has been fitted for its reception on the balance.

A change of circumstances involves the necessity for a change of modes. We once had virgin lands and cheap and reliable labor. Then, if ever, the extensive and superficial system had its advantages, for (though ultimately destructive) it often gave large immediate returns. Now with to a large extent, exhausted and denuded fields, and unreliable and expensive labor to contend with, it becomes necessary to obtain present support, and accomplish the ultimate improvement of the land, that we resort to other modes and appliances—that the extensive give place to the intensive—that we plough early and plough deep.

For what do we plough? This may seem a trite question, but it opens a wide field for inquiry, observation and reflection. What do we plough for, and how and when should we do it? We plough to pulverize the earth, whereby the delicate, hair-like roots of plants may ramify and extend in every direction, thereby obtaining ample pasturage to feed upon. And here the advantages of deep ploughing will at once be apparent. The man who breaks his land eight inches deep, gives his plants twice the pasturage that he does who breaks but four, and he who penetrates twelve, trebles the sources of supply.

We plough to let in the air and sun that we may secure the fertilizing properties of the one, and the verifying and ameliorating action of the other, and we should plough deep in order that these beneficial influences may be extended to a greater area of root pasturage. The air contains ammonia and carbonic acid, both highly essential to the growth of vegetation. They are rapidly and in quantities absorbed by porous bodies, while compact bodies appropriate little or none of these; therefore by thorough and deep communition of the soil, we greatly increase the amount of these bodies taken up and held by the land. They act also as solvents upon many of the constituents of the soil, thus preparing them to be taken up and assimulated by the plant. We should plough deep in order that these benefits may be extended to a large bulk of soil.

We plough deep that our lands may be saved from washing; and that the rain water may not run off, carrying with it its fertilizing properties as well as those of the soil it reaches. Rain water as well as the atmosphere abounds in carbonic acid and ammonia, and by enabling it fully to penetrate the earth, we secure these valuable ingredients.

We plough to turn under vegetation (dry or green) and to bury the seeds of

*An Essay read before the spring meeting of the State Agricultural and Mechanical Society, in Charleston, April 30th, 1873, by Dr. John H. Furman, of Sumter.

noxious plants. By running deep we increase the depth of our soil, and cover up these seeds so far from the influence of air, heat and light, that comparatively few germinate, and those that do, come up slowly and in a sickly condition, and are easily destroyed, thereby lessening the labor of cultivation.

By ploughing deep we not only turn under and give comparative rest to the surface soil, (which has so long been drawn upon,) but bring up a subsurface, which has, perhaps, never been disturbed by the plough—into which the roots of cultivated plants have penetrated but little, and which contains much of what has been drained from the surface soil. In soils as light and sandy, (as are those cultivated by many of us,) the high winds of March and April carry off quantities of the light surface, thereby rapidly exhausting the land of humus, which is its life blood. By deep winter ploughing, we turn up a valueless surface, which, if blown off, is a small loss, as there is an inexhaustible supply left. And here I would draw a distinction between the ploughing of preparation and that of cultivation. The one belongs to winter, and should be deep; the other to spring and summer, and should be shallow.

It is true that the term deep ploughing is altogether comparative. What would be deep with us would be considered shallow by the turners-up of the almost fathomless alluvial deposits of the West. What might be deemed shallow here would be considered almost no ploughing at all there. The character of the soil and subsoil must, to a great extent, regulate it. When the surface is thin and deficient in vegetable matter and the subsoil of an inferior quality, we should commence continuously and gradually descend as we add to the quantity of humus and the other elements of fertility in the land till we have reached the greatest attainable depth. And here I would remark that in deepening and improving the quality of our soil we not only add to its ability to sustain plant life, by the increased amount of pabulum it affords, but add vastly to its capacity for absorbing and retaining moisture, a fact, the practical importance of which cannot be overestimated.

The objection urged to deep winter preparation and shallow cultivation, that the lands run together and become too hard for the vigorous growth of vegetation, will be found of limited application where the lands have been properly broken and to the right depth. A due regard being paid to drainage, this objection applies, almost exclusively, to soils largely predominating in clay.

If deep ploughing possesses advantages already hinted at, how important that it should be accomplished as early in the winter as practicable, that the benefits of the winter rains and frosts (in further pulverizing the land) may be secured, that the air may have as long a time as possible to circulate through its bulk, that the stubble, weeds and grass may have time to ferment and decay, that the moisture, which arises freely from the subsoil, in seasons of drouth, by capillary attraction, bringing with it the soluble elements of inorganic fertility from far below the surface, and depositing them there as it evaporates, may also contribute its benefits.

Mr. President, our true policy is concentration; and peculiarly is it so in our present circumstances. By a proper deepening of the soil, combined with high and

judicious fertilization, one acre may be made to yield what it has been customary to gather from four or even six, with a far less expenditure of labor and greater certainty as to the results; for with a deep soil, in the right physical and chemical condition, we require, comparatively, but little rain.

The Extreme South: Biscayne Bay and its Surroundings.

II.

Approaching Biscayne Bay from the North, the first inlet—Boca Ratones—is nearly opposite the mouth of Miami River, three and a half miles distant. On the South bank of the river, just at the point and on a beautiful bluff, is a handsome two-story house, belonging to a Northern gentleman. The view from the front piazza is not surpassed by anything on the Bay. Indeed there are few places where nature has indulged more lavishly in the "*beautiful.*" Fort Dallas, occupied by United States troops during the Seminole war, formerly stood on the North bank. The barracks were accidentally destroyed by fire about a year ago. This is also considered a very valuable place, and presents many atttractions in the way of elevated building sites, pretty scenery, exposure to the breezes of the Bay, &c. It is now owned and occupied by a gentleman from Mississippi. This place was originally settled by a South Carolinan for the purpose of making sugar, and raising tropical fruits. The breaking out of the Indian war compelled him to abandon his home before much had been accomplished in either business, and he never returned. A cocoanut-grove of perhaps seventy bearing trees, rising up from the water's edge, impress the stranger with peculiar interest. For apart from their great beauty and intrinsic value, they may be regarded as safe *thermal* guides to those in quest of the proper latitude for tropical fruit culture. The cocoanut tree, contrary to what its appearance would seem to indicate, is exceedingly sensitive to cold. So that any locality in which it thrives and matures its fruit in all seasons—as is its nature—may be selected by the tropical fruit-grower, with the full assurance of possessing suitable temperature for the business. The cocoanut flourishes in places, and under circumstances that few other trees would grow. Hence, they are not unfrequently seen on the rough margins of bays and water-courses, planted by the tidal wave the well protected seeds, having been brought by winds and currents from the Bahamas, and doubtless from even more distant shores. It is claimed that they may be made to begin bearing in four years. They do not, however, reach maturity in less than eight or ten years; at which time the annual yield is said to be about four hundred nuts per tree—not all at once, but distributed along throughout the year, thus affording the novel spectacle of blooms, and fruit of different sizes and ages on the same tree. Every settler has a few cocoanuts about his house for private use, but no one raises them for market, on account of the small price they sell for. This is a mistake. They occupy little space—twelve feet each way being considered ample room. This distance gives 300 plants to the acre, and allowing an average of 200 nuts to the tree and two

cents nett each, we have $1,200, as the clear profit, excepting the cost of gathering, on an acre for one year. Even half of this estimated income would be a paying business, when it is remembered that they will grow on almost any kind of land within a reasonable distance of salt water, and require literally no cultivation whatever.

The lands on the Bay may be divided into hammock and pine; and the latter again into high and low or prairie. The hammocks are high, generally very rich, and are covered with a dense growth peculiar to tropical regions. The undergrowth is so thick and the vines are so numerous and unyielding that one's progress is slow, and often painful.

Among forest trees may be mentioned live oak, crab-wood, mastic, gumbo-limbo, pigeon-wood, cocoa-plum, custard and seven years' apples, royal and cabbage palms, mangrove, wild fig or India rubber, sea-grape, (not a vine,) wild lemons, limes, bay, &c. These names are picked up from the natives, and may not be recognized so far from home. Crab-wood resembles ebony, and is highly esteemed for making walking canes, billiard-cues, &c. Pigeon-wood and bay, (which grows here on uplands,) and is quite large, together with two or three other reddish colored hard woods, names unknown, could be made into handsome furniture. Black mangrove and mastic, both very hard and durable, are chiefly used for boat timbers.

On portions of the bay, and along some of the fresh water streams, there are considerable tracts of saw-grass marshes of great fertility. If susceptible of thorough drainage, they would be inexhaustible and of great value. The soil is from four to six feet deep--black, and entirely free from any sensible trace of sand or grit. Appearances favor the practicability of reclaiming these lands at small cost, but without actual experiment no positive conclusion can be reached. In their present state, they constitute a mine of wealth to the fruit grower and market gardener. For vegetables, as a top-dressing for bananas—indeed, for anything that grows on higher and dryer ground—this muck or loam, properly tempered with wood ashes, is unrivaled. It is accessible at all times, and easily transported by boats or carts; and with the equally exhaustless supply of alkaline material with which to neutralize whatever acidity there may be in the muck, no one thus privileged need wish for commercial manures, nor complain of poor lands. On Arch Creek may be found narrow strips of similar muck beds. They are, however, free of saw-grass, producing instead cocoa-plum, cabbage, palmetto, &c., and are higher than the saw-grass flats. Garden vegetables thrive well with the assistance of a slight application of ashes. A lot of young bananas recently planted out are growing off beautifully.

The hammock lands immediately around and South of Miami River have considerable rock on them; in some cases interfering seriously with the use of the plough. This rock or sand-stone is in some localities combined with lime and shell in large proportions. It is readily crushed and pulverized, and underground is soft enough for the roots of trees to penetrate, which they eagerly do when convenient. Reduced to powder and scattered around plants, particularly on new or damp land, is attended with good effect. Hence, there may be wisdom after all in the custom of the Conks, (a term applied to the natives of the Bahamas and

other Islands who subsist by fishing and sponging,) to select the most rocky spots for cultivation. A Nassau man was heard to say, in substance, that he never thought of planting a banana without setting it upon a rock, and where nature failed to put one in the desired place, he always supplied the deficiency. Rather tough even for a rock story. Yet I have seen at Key West and other places, sappadillo, tamarind, cocoanut and Guava trees, laden with fruit, and growing thriftily where the soil on the rock could not have been more than six inches deep; and as an experiment, some tomatoes were planted in only four inches of soil. They are in fruit and doing well, having also passed successfully through a six weeks' drought. The soil is what may be termed leaf-mould, and very rich in vegetable matter. That the little rootlets of the tomato plants found their way into the porous rocks, scarcely admits of a doubt; and that they were materially benefited thereby is equally probable. Hence, it would seem that, except so far as they may hinder the free use of agricultural implements, rocks such as we have here are rather an advantage than otherwise.

The high pine lands are very rocky. Scarcely an acre but would furnish rocks sufficient to fence it. Saw-palmetto and campté-root are also abundant, and the wonder is how they manage to thrive so well in such a crowded state. This campté-root is made into starch, which sells in Key West at 6 to 9 cents per lb. by the barrel. Most of the mills for grating or grinding the root are very crude, and are generally operated by hand. Two men, without the aid of a horse to transport the roots, can turn out two barrels of starch a week. Starch-making, therefore, on a large scale, and with improved machinery, would doubtless pay well, as the supply of campté is very abundant; and in digging the root a portion of the bulb by a dexterous use of the hoe, is easily left in the ground, from which another will spring forth and be ready for gathering in less than two months.

The pine timber is of fair size, and with the enormous prices which lumber commands in Key West, not to speak of the home demand, something, it would seem, might be done in this respect. A very luxuriant banana grove, comprising, perhaps, one hundred trees, may be seen on high and apparently very dry pine land a few rods from the Bay. Many of the trees are upwards of twenty feet high, and measure a little more than three feet in diameter two feet from the ground The surface rocks were collected and placed around the bases of the trees, and a mixture of semi-decayed sea-weed and ashes used to manure them.

J. N. WHITNER.

Lime and Charcoal.—Both charcoal and lime, are to be obtained in any quantity and in most situations at a very trifling cost, and are valuable to the farmer. The lime will supply carbon and oxygen to the plants during their growth, and the charcoal will take up and supply them with all the ammonia necessary to their full development without any over-supply. Charcoal will also afford to plants sufficient moisture during long droughts from its hydratic quality of saturating its pores, and from its great retentive power. It also lightens the soil, permitting the sun and air to penetrate to the roots of the plants.

The Secret of Yankee Prosperity.

Under this head the veteran editor of the *Mobile Register*, Hon. John Forsyth, gives some of his impressions of New England, and the causes of its prosperity. There is food for thought in his remarks, but we opine that he has not fully revealed the "secret." A cold climate and a rugged soil have developed in the people habits of self-reliance, industry, thrift and economy, to which the inhabitants of our more genial region are strangers. Their manufactories and their machine worked farms, are the natural outgrowth of these habits, and of the close, calculating, acquisitive disposition which generally accompanies them. If we are to imitate them in their methods of working, we must be willing to acquire, to some extent, also those qualities of mind, and those modes of thought which make them successful. Here is what Mr. Forsyth says:

A Southern man, after having made a flying trip through the New England States, comes back filled with astonishment at what he has seen, and perfectly discouraged with his own section of country. There he saw little villages sticking in the midst of barren and uninhabitable mountains, with no surroundings to support them, evincing a spirit of life and prosperity unknown to even our large towns—the recognized trade-centers of our best agricultural regions. And in the country he saw little farms producing like first-class English gardens, though on soil originally too poor to have grown bear-grass, and in situations that a Southern man never would have thought capable of being converted into a goat pasture. The people, all as a general thing, seemed contented and prosperous; and if he had inquired into their circumstances he would have found, strange as it may appear, everybody in these little villages well off and making money, and the little farms, with their stone piles here and there, and their stones constantly working to the surface to be carried off into other piles, and their annual calls for fertilizers to the extent of one hundred and fifty dollars per acre, actually clearing their owners from one to three hundred dollars on every acre inclosed. No wonder that he is discouraged when he looks from this picture upon our favorably located towns and notes, their inactivity, their poverty and general dilapidation, and upon our broad and fertile acres, and reflects that they are really, in very many instances, not paying the expense of culture.

One would naturally conclude that there must be some secret connected with all this, and so there is. At the village station the close observer would notice piles of cotton bales, a circumstance calculated to create no particular interest in the South, but there, thousands of miles away from where cotton should be grown, it would take the form of mystery. Stepping out upon the platform in quest of a solution, his ears would be greeted by a sound as of a waterfall, having a peculiar humming accompaniment—spindles. The case would be made plain—the strange little village would be recognized as a manufacturing point, and then he would know that we in a far off section were digging its prosperity from our soil—feeding it into a vigorous life upon the very food for which our towns were starving, and asking it nothing in return; actually shipping our cotton at our own expense, and then in order that it might grow fat on its business, buying its fabrics at its own profitable figures, and paying transportation on them to our homes. What a kind-hearted people we Southerners must be!

Then for the secret of success among the farmers. Passing through the country with his eyes open, the close observer would at the proper season soon have his attention arrested by an improved mower sweeping over the meadow under the exclusive management of a youth of, say sixteen, and accomplishing more in a day

than could in that time be wormed out of a dozen freedmen with their scythes. A little later and he would see the younger brother of the youth turning the hay; and then in due time would come a still smaller boy with rake, followed by a trio of little fellows having all sorts of fun as they, with a hay fork, stored away the crop in the hay-loft.

In everything done on the farm in New England this same plan is resorted to. If the soil must be prepared, instead of setting a dozen freedmen at it with their mules and ploughs to sweat through a week, as we would do, out comes a machine managed by a boy or two, and in an incredibly short space of time the job is done and well done. A lot of seed is to be sown that would give our hands a long, tedious task; but there a stripling with a seed sower puts it down exactly right and in very short order. And when the crop is ready to be hoed, instead of charging it with a black army to play for pay, a boy harnesses his nag to a horse-hoe, takes his seat as in a sulky, and rides about over the field hoeing several rows at a time. In short, New England works by machinery, and therein lies the secret of Yankee prosperity. She has simply changed places with us—she owns her labor. If it were otherwise, or in different words, did she have to work on our plan, and depend on our kind of labor, and did we not in the goodness of our hearts give her the profits on our products, a few years would find her entirely depopulated, a happy *hunting* ground upon which the redman might pitch his wigwam, never to be disturbed by any encroachment of civilization.

There is no reason why we in the South should not own our labor in the same way, and set our spindles going, thus giving prosperity to our own towns and villages. We can never be a success till we do it. Let us think the matter over.

Straightening the Wateree.

I perceive in an article of Mr. Geo. S. Wicks, of Richland, in the June number of the RURAL CAROLINIAN, several points well taken, in which his observation and experience of four years are confirmed by those of us "to the manner born," who have thought upon these subjects.

1. The value of pine lands for cotton, &c.
2. The necessity for drainage on the Wateree swamp lands.
3. The extent and value of that swamp, from the shoals at Camden to the mouth of the river.
4. The practicability of draining that swamp, and relieving from the effect of freshets by straightening the river.

Mr. Wicks' article suggests several points of interest, but I desire only to say now, that well sustained tradition assures us that fifty years since that able and eminently practical patriot, Col. Abram Blanding, had devised a scheme for straightening the Wateree, which would have been carried into effect but for the fact that the valuable plantation, now owned by Mr. Wicks, was then owned by a distinguished citizen of Charleston. The scheme would have *transferred* his plantation to the further side of the river, and therefore he objected.

The work was a very important one then, but it is much more so now, when the labor requisite to embank and drain is so much scarcer and more expensive, —when it is indispensable to subdivide these large estates, and it is inexpedient,

indeed impossible, to subdivide them until a general system shall have drained them, and rescued them from the floods of winter.

To show, at one glance, the necessity for straightening this river, and the ease with which it can be effected, it is only necessary to state, that from Camden to the Sumter line, "as the bird flies," is *nine miles*, "as the river runs" it is *fifty miles*. There is one point at which a cut of less than one-third of a mile will save six or seven miles of travel to the water in its flow.

It would be difficult to exaggerate the wealth that this improvement would add to the counties of Kershaw, Sumter and Richland, and through them to the State.

A company could readily be formed, I think, to carry out the work. Will not Mr. Wicks pursue his thought to action? He will find allies all the way up to the shoals.

I may add, that I have no interest in the matter other than such as is common to every citizen.

WM. M. SHANNON.

Camden, S. C.

Cultivation by Steam in Louisiana.

Mr. O. E. Lawrence, of Magnolia Plantation, parish of Plaquemine, Louisiana, responds to a request from the Department of Agriculture for a statement of the results of his trial of the steam plough, as follows:

Two hundred and twenty acres of my cane crop, one hundred and forty acres of which were plant canes, and eighty acres first year rattoons, were, I believe, as thoroughly ploughed and cultivated by steam as could be desired. The plant canes were grown upon land which, after yielding a crop of corn, was again broken up by the steam plough 26 inches deep; then, during the winter, laid off in rows fully 8 feet apart and 8 inches deep. In the month of February the cane was planted and covered carefully with a hoe. I avoided carting the seed cane for plants upon the land, carrying it in from each head-land by hand. The seed was good, and was planted in the usual way by laying down three canes in each row. It came up well, giving a perfect stand. In the months of April and May, when the plant cane was about 18 inches high, I subsoiled the crop with my five-tined *steam cultivator* 26 inches deep, twice between each row, working over about ten acres each day. It left the land thoroughly loose and pulverized, and elevated about 6 inches above the level before subsoiling. This, as the cane began to shade it, was clean and free from grass, and thus was obviated the necessity of giving them at this period of the season any more work, which in ordinary cultivation is always requisite. The cane continued to grow with great rapidity, and on the 10th June, when it was large enough, and the ground sufficiently settled to bear up the mule-teams, I gave it a thorough ploughing with our two-mule ploughs, following with the hoes, hilling and laying it by. Thus the entire crop, with the exception of this last working, was *cultivated and made by steam.*

On the 1st of September, these canes were blown down very flat, from which they only partially rose. They cut for the mill, when rolled in December and January, from 7 to 12 feet in length, and this after being frosted so that we had to throw away the first two joints.

The juice weighed but 6½ to 7 degrees Beaume, but under the circumstances the yield was over 3,000 pounds of double-refined sugar to the acre, and had the canes stood up until cut for the mill and been as ripe as our canes usually are, I

feel satisfied they would have produced over two tons to the acre, and this upon old heavy clay land.

The eighty acres of first year rattoons grown from the stubbles of the *steam ploughed cane*, planted in a similar manner last year, were barred off and well dug in the month of March, then subsoiled and cultivated by steam precisely as the plant canes. The yield was over 2,500 pounds of sugar to the acre.

Deep steam-ploughing upon well ditched lands, I have always believed, would result in an average yield of about 2,000 pounds of sugar to the acre, but this was when I only expected to use the steam plough in the breaking up of the lands. The use of steam for deep subsoiling in the cultivation of the canes, I confess, has far exceeded my expectations, and I am fully convinced that an average yield of even much more will be realized, and this too with less than half the labor now employed under the old system, in which the average yield is not over 1,000 pounds of sugar to the acre. To this may be added the complete preservation of our stubble canes against the cold and winter rains, so often disastrous to our rattoons.

The advantages of deep ploughing and subsoiling by steam over the ordinary cultivation by horses, and the consequent trampling and packing of the ground, can hardly be overestimated. It enables the land to absorb the heavy rains and prepares it for the free admission of air and heat, and thus changes entirely the character of our soils—rendering the heavy clay lands productive and easily worked in seasons of drought, which we are so often subjected to. The crops grown upon deeply-ploughed lands sustain no injury. This has been constantly my experience; in fact the steam plough seems to command the seasons, enabling the soil at all times to retain and transmit moisture, upon which fertility mainly depends. But I fear the prospect at present is not very bright for the extension of steam cultivation in our State. A long war, with the breaking up of the most of our large plantations, the entire destruction of our labor system, followed by scarcity, inefficiency, and high price of labor, and this by a succession of bad seasons, together with enormous taxation, has to a great extent disheartened our planters and paralyzed their energies; and though they have made almost superhuman efforts to restore their estates, yet to-day we have to witness, lamentable as it is, this once great and prosperous interest almost in its last throes of existence. Many of our finest plantations are now abandoned, and offered for sale without purchasers at less than half the cost of the improvements.

Deep ploughing; less land cultivated, and that done much better; the introduction of steam ploughs and the lands ploughed by contract, (where the proprietors do not choose to purchase,) as is now done with eminent success in England and other countries, and a check to our excessive taxation, would soon restore us. With this every suitable effort should be made and inducements held out with a view to bring to our fertile lands and genial climate, so rich in promise, the enterprising and intelligent emigrant of every nation. Then, as the future surely indicates, will come a division of our lands with the division of our system of labor. The large and costly sugar-houses will be employed as central factories; capital and labor will blend harmoniously together, and I trust, a new era will dawn upon our now depressed and struggling people.

Cabbage Lice.—The *Horticulturist* recommends, on the authority of a correspondent, opening the leaves as soon as the plant begins to head and the louse makes its appearance, and sprinkling in common salt, which it is stated has been entirely successful.

Thomas Jefferson's Farming in 1796.

Eight bushels of wheat to the acre is not brilliant agriculture, nor could the production of eighteen bushels of Indian corn to the acre, at the present time be thrown in the face of a rival farmer with any reasonable hope of abasing his pride. But in 1796, when Mr. Jefferson had been two years at home after retiring from the office of Secretary of State and was showing his home farm to an old French friend, the Duke de la Rochfoucauld, these were the figures he gave as the utmost he could then extract from his lands in the garden of Virginia.

Thus Mr. Parton writes in his "Life of Jefferson," now appearing in installments in the *Atlantic Monthly.*

We know not what may be the product per acre of the same lands now, but we venture to say that, far as we are yet from having reached anything like thorough farming, except in isolated cases, American agriculture has made many good steps in advance since Mr. Jefferson's day.

Comparing the results noted by Mr. Parton with those attained by planters of equal standing to-day on lands of similar character and which have been under cultivation from fifty to a hundred years, we may draw at least a little encouragement from the showing presented. The world moves, even in the sphere of agriculture, and though we are far from "high farming" and the greatest possible crops, we are on the road to something better than has yet been attained.

Gleanings from Many Fields.

Some Advantages of the South.—A Mississippian correspondent of the New York *Tribune* thinks that the Northern man or the foreigner who contemplates a removal, in order to better his condition, especially as a farmer, would do well, in point of mere self-interest, to consider the claims of the Cotton States. He says:

In point of agricultural production there is one signal advantage. While corn, wheat, oats, sweet and Irish patatoes, clover, all the fruits, in fact every variety of food-product commonly consumed, flourishes to perfection, these States possess, so far as the rest of this country is concerned, a monolopy of the production of cotton, which is surer than any general crop to put money in a farmer's pocket. If he will raise his own meat, bread, potatoes, &c., which he can easily do, he can scarcely fail, at any price to which cotton can fall, to have surplus money at the end of the year. A bale of cotton of 500 pounds is worth $100, sometimes more, sometimes less. A bale can be raised on an acre of good land without manure. With a little help one man can make ten bales a season, and when gathered and baled it can be kept until the price suits (that is, if you are not in debt), without danger of moth and rust. Great numbers of the old estates are offered for sale very cheap. The emigrant can come either as an individual or in a colony, just as suits him. I would advise to come down in the fall, after 1st of October, pick cotton for $2 or $3 per day if one is scarce of funds, look around, and either rent or purchase for the coming year, and then bring on family or colony.

Absorption of Ammonia by Charcoal.—The *Journal of the Chemical Society* (London) gives a very interesting series of experiments on the absorption of gasses by charcoal, as that phenomenon is effected by temperature. The experi-

ments were conducted and are reported by John Hunter, M. A., and were performed chiefly with gaseous ammonia and cocoa-nut charcoal.

The principle established by these experiments is, that the absorbent power of charcoal diminishes from 0° C. to 55° by a ratio corresponding to the change of temperature; but above that temperature the ratio constantly decreases as the heat increases. These facts have an important agricultural bearing. Vegetable mold owes its dark color chiefly to the presence of carbon, substantially in the condition of charcoal, and on this, to a great degree, depends its power to absorb gases. At night, when the temperature of the soil falls to 15 C. (60 F.) the absorption of ammonia will be active and a stock will be accumulated in the soil; but when the temperature rises with the sunshine the function of the leaves become active, and the supply of food for the roots is diminished.

The Carob Tree or Algaroba Bean.—For a long distance along the coast of Catalonia and Valencia in Spain, the *Pacific Rural Press* says, where vegetation feels the effect of the direct ocean breeze, grows the algaroba or carob tree, an exceedingly useful and valuable tree, because furnishing a large amount of highly nutritious food for horses aud other animals.

The carob seems nearly related to the sweet or honey locust of the Southern States, but bearing a much larger pod, filled with rich, oily seeds. Large quantities of these pods are annually shipped to England, where they are used as a substitute for oil cake as food for stock, being a cheap and fattening food. The pods when ripe, but before being dried, are said to contain more than fifty per cent. of sugar; hence their fattening qualities. For transportation the pods are dried whole. When wanted for feed they are broken up by pounding, and the dry pulp, with the seeds, fed without further preparation. They grow upon almost any soil; any sterile and rocky place where no other tree is found, grows luxuriantly the carob tree with its valuable fruit.

Wasting at Home and Buying Abroad.—The German system of Experimental Stations is furnishing scientific agriculture with *data* which cannot fail to have an important bearing on the production of that region. Mr. Lepmann, director of the central station in Bavaria, reporting on the sewage of Munich, the population of which is 177,000, says, in substance that—

The amount of available nitrogen annually lost in the human excrements, fluid and solid, of that city is 1,857,714 pounds; to which he gives a value (reduced to our currency) of $433,467. This gives an aggregate loss of nearly half a million of dollars. While this waste is being suffered, the German fields are enriched by an annual importation of 1,000,000 hundred weight of Peruvian guano, at a cost of about three millions of dollars. Munich, however, is but one of a number of German cities whose wastes, if calculated at the same ratio, would be equal in value to the fertilizers imported. Mr. Lepmann proposes that this waste be saved. A sensible proposition, which we shall do well to act upon in America.

A Propeller in the Field.—Dr. Geo. M. Ramsay has invented a steam plough, operating on a new plan, whereby the engine is shoved forward rather than held back by the operation of the machine. According to the inventor's statements—

The peculiarity of his plan consists of a screw-ploughing cylinder four feet long, with four spiral blades, each one foot wide, and is geared to revolve close up to the hind wheels of a steam-wagon. Dr. Ramsay states that he had experimented

sufficiently to know that he could plough four feet wide and ten inches deep, in the stiffest sod, at a speed of four to five miles an hour, with a steam-wagon of five tons weight. The line in which the soil is moved permits a higher rate of speed than the ordinary plough. The action of the spiral blades upon dirt was shown, and demonstrated the interesting fact that the screw turned four furrows—one for each blade—similar to an ordinary plough, but stirred and pulverized the soil in a very superior manner.

The Dairy, Farm-Stock and Poultry.

Sheep Husbandry in the South.

Rev. J. T. Spencer, in the *Rural Alabamian*, gives his views in favor of sheep in the South, as follows:

The annual increase of population in the country requires the wool from three hundred millions of sheep; so that to clothe the increased population would require an annual increase of sheep equal to four millions. But when we come to consider that there is now an annual deficiency of over seven million pounds, there can be no doubt but that wool-growing is the best staple pursuit that can be engaged in. We cannot glut the market, nor will there be any long time that the market will be depressed below a point of profitable production. On the contrary, it is certain that no farm product goes less below this point than wool.

It has long been a source of wonder to me that so many farmers in the Southern States neglect sheep, for the very precarious business of cotton-growing. Every year will give them a crop of wool, if they do but take care of their sheep; but there is no certainty for cotton, prepare the ground ever so well. If we have been rightly informed, the cotton raised in the South has often cost the planter more than he has obtained for it in market. Too much dependence has been placed upon this most uncertain and expensive crop.

I have tried cotton growing upon probably as good a cotton farm as can be found in Tennessee, and I have also tried sheep upon the same farm; and I am free to confess that I can raise a given amount of money quicker and much easier with a flock of sheep than with cotton. But I find it well to raise both sheep and cotton, as by that means I get a better profit than to be confined to either alone.

Every good farmer keeps a few good sheep at least. Very many who have been in the habit of putting up a large quantity of pork for summer use, now select out a few wethers and give them extra keep, so as to make their summer meat of mutton—decidedly the most healthful that can be used—and thus realize the money for their pork.

The inducements to grow more wool are, a sure market, less fluctuation from the point of profitable production than any farm product, a larger interest or profit on the capital invested than any other business—and therefore the best business, as a general thing, that the farmer can follow.

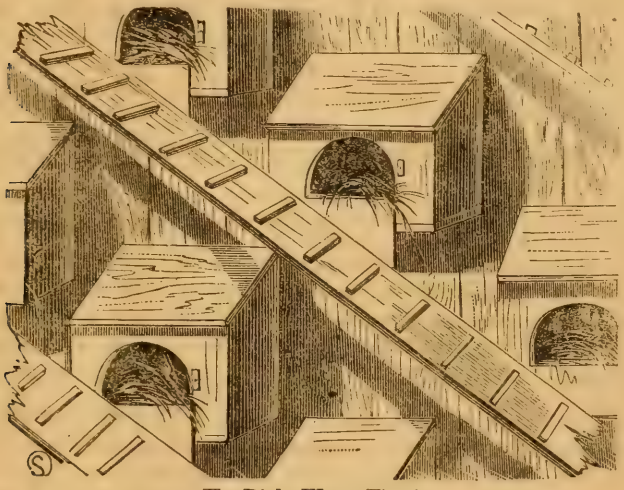
In the out-of-the-way regions where there is no good market for mutton convenient, I would recommend the finer wooled varieties for their fleece; but near the large cities, where there is a constant demand for the carcass, there is certainly great profit in the coarser wooled and larger kinds; and they are generally more hardy and vigorous in growth than the others.

As already intimated, sheep convert every species of vegetation into money. They eat almost anything that grows, and that part of it which is not convertible

into flesh or fleece, drops upon the soil as a most excellent fertilizer. A flock of sheep will enrich a piece of poor land quicker than anything else I know of.

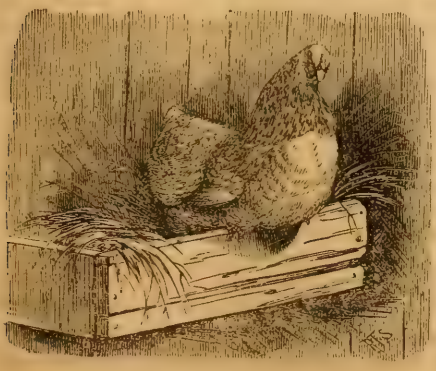
There are many grasses that may be profitably grown in the South for sheep, but for permanent pasture none are better than Bermuda. I know of old and poor districts in Tennessee which had been rendered almost equal to the famous Kentucky blue grass regions by it, and I learn that the same is the case with many portions of Georgia and the Carolinas.

The Construction of Nests for Fowls.



The Right Way—Fig. 1.

The hen naturally seeks concealment in depositing her eggs, and this instinct should always be respected in the construction of nests. An old barrel, with a handfull of hay in the bottom, a box with sufficient depth to hide her from casual observation, or a slight excavation in the ground, behind a board or under a pile of wood, suits her as well as the most elaborate contrivance which the mechanic can build; but in a well kept poultry house, we desire neatness and a compact, orderly arrangement, and suitable boxes must be provided. An open one like that represented in Fig. 2, is objectionable, both from its lack of concealment, and on account of the propensity on the part of the hens to use it as a roost. Boxes may be fastened to walls, however, if made with tight and slanting tops, as in Fig. 1. To prevent roosting at entrances, at the sides of boxes there are doors opening downward which are to be closed every evening, and fastened with buttons, on finishing gathering eggs for the day.



The Wrong Way—Fig. 2.

The Profits of Poultry on the Farm.

John Mechi says in the *Gardeners' Magazine:* "Poultry is evidently dear food to the consumer; but does it cost more food to produce a pound of poultry than a pound of meat, live weight? I answer decidedly not, but the reverse. For my cattle and sheep don't eat worms and insects, whereas fowls consume them abundantly, and economize and apply every scattered seed or kernel that would otherwise be wasted. In another point of view, is the cost of attendance and shelter greater with poultry than with cattle? I reply not. As to the production of eggs, that depends upon the quality and quantity of food administered, and the accompaniments of proper warmth and shelter. There is no fear of overstocking the market with either eggs or poultry; we consume daily one million of foreign eggs! I generally keep from 300 to 400 fowls. They have free access to every field during the whole of the year, and although they help themselves at harvest time when the corn [wheat] is in sheaf, I always get my best crops of corn on fields adjoining the hen house. I have this year two fields of wheat drilled, and only one bushel of seed per acre. They come within ten to twenty yards of the fowl house, and are a perfect plant, although the poultry have been scratching and cultivating the fields ever since they were drilled. We are apt to forget that fowls, like sheep, manure where they go. I must say I used at one time to feel nervous and angry when I saw them hard at work on the newly-sown corn, but I soon learned to feel confident that insects were their principle gain, and that my well and deeply deposited corn escaped.

Miscellaneous Farm-Stock and Poultry Notes.

Wonderful Sagacity of a Drake.

The following incident is related by a distinguished naturalist, who heard it from a person believed to be worthy of entire credit for truthfulness:

"A young lady was sitting in a room adjoining a poultry-yard, where chickens, ducks and geese were disporting themselves. A drake came in, approached the lady, seized the bottom of her dress with his beak, and pulled it vigorously. Feeling startled, she repulsed him with her hand. The bird still persisted. Somewhat astonished, she paid some attention to this unaccountable pantomime, and discovered that the drake wished to drag her out of doors. She got up, he waddled out quickly before her. More and more surprised, she followed him, and he conducted her to the side of a pond, where she perceived a duck with its head caught in the opening of a sluice. She hastened to release the poor creature and restore it to the drake, who, by loud quackings and beating of his wings, testified his joy at the deliverance of his companion."

Why the Chester White Hogs are in Disrepute.

Mr. S. H. Todd, in the *National Live Stock Journal*, expresses the opinion that swindlers and speculators have contributed much towards placing the Chester White in a false light before the public. They have filled the country with poor *white* hogs, under the name of Chester Whites, but which were *not* Chester Whites,

and the public, ignorant of this deception, have acquired an erroneous impression of the real value and worth of this excellent breed of hogs. He is confident they will outlive these adverse influences, and that the public will in time learn what the *real* Chesters are, and then they will be much more prized than ever before. He regards the Chesters as possessing a *fixed* type, which they transmit to their progeny with great certainty, and always tell when he couples his hogs what he is going to get.

The Comparative Fecundity of Ducks and Hens.

The English people, the *Rural Southerner* says, are noted for raising ducks, and they often make experiments. One was lately made to test the relative fecundity between ducks and hens, and to determine by which of the two the larger number of eggs would be produced in a given time. For this purpose three hens and three ducks were selected, all hatched in February, and nourished with suitable food. In the following autumn the ducks had laid 225 eggs, while the hens in this case, had laid none. In the following February the laying season began again with the ducks and continued uninterrupted till August. They showed no inclination to sit, and became very thin, but subsequently fattened up somewhat. In the meantime the hens had not been idle. The total number laid by the hens amounted to 257, or 86 eggs each; and the ducks produced 392, or 131 each. Although the eggs of the ducks were rather smaller than those of the hens, yet they proved to be decidedly superior in nutritive material. The superiority of productiveness, therefore, appears to be on the side of the ducks.

Charcoal for Poultry and How to Feed It.

Mr. S. R. Mann, in the *Poultry World*, expresses the belief that while the benefit which fowls derive from eating charcoal is acknowledged, the method of putting it before them is not well understood. Pounded charcoal is not in the shape in which fowls usually find their food, and consequently is not very enticing to them. He has found that corn burnt on the cob, and the refuse—which consists almost entirely of the grains reduced to charcoal, and still retaining their perfect shape—placed before them, is greedily eaten by them, with a marked improvement in their health, as is shown by the brighter color of their combs, and their sooner producing a greater average of eggs to the flock than before.

Cure for Colic in Horses and Mules.

To cure colic in the ordinary medical way, the *Stock Journal* says, you can prepare a good "colic drench" thus: Take tincture of opium, one ounce; sulphuric ether, half an ounce; mix with a pint of tepid water. If necessary, repeat in half an hour. A much better way to relieve the horse is the application of a fomenting bandage to the abdomen. In winter wet a woolen blanket in hot water, wring it slightly, and apply to the abdomen, bring the ends up over the back and fasten. If the weather be very cold, put a dry blanket over this to keep it from cooling too fast. In the summer apply a blanket wet in cool water. This fomenting blanket will relieve the horse in a few minutes, by determining internal heat to the surface. We have found in summer almost instant relief to the horse from lying down in the water.

Horticulture and Rural Adornment.

Horticultural Hints for July.

At this season of alternate droughts and heavy, beating rains, it is difficult to get a good stand of any garden crop, and especially of the small seeded plants, which, if they germinate at all, are very liable to perish during the first few days of their existence, unless protected in some way against sun and rain. We have recommended sowing cabbage seed in May and again in June, in the South Atlantic coast region, and in the lower portion of the Gulf States. We may sow once more from the first to the tenth of July, and if we succeed with this sowing, we prefer for our winter crop the plants thus grown to the earlier ones. Keep the seed-bed moist by frequent waterings with soap-suds or other liquid manure, not made too strong, till the plants are well established. If you have good plants from previous sowings, transplant a few, as also cauliflower and broccoli, choosing the evening or a rainy day for the operation and shading the plants for a few days; but next month's plantings will be likely to do better.

———Of beets, carrots and parsnips, it is now very difficult to get a stand, but if you can protect the young plants against the hot sun and beating rains you may get a fine crop early in the fall. Turnip seed must be sown. If the "stand" fails, try again. Snap beans may still be planted for a succession. Water melons, squashes and cucumbers, for a late crop, may be planted, and if they withstand rain and sun and survive, they will give you a good late crop. Of peas, it is difficult to get a stand, and keep the plants growing during the heats of July and August, but by spading up deeply a moist rich spot, planting the seed deep and covering the ground with straw, good crops can sometimes be had in the fall. Early corn, for a fall crop of roasting ears, should be planted the first of the month. Tomatoes may still be planted, using cuttings or layers, (watering and shading them,) if you have no young plants.

———Irish potatoes for a fall crop may be planted toward the last of this month or in August. To prepare your seed, about two weeks before planting spread the potatoes on the ground in a moist spot, cover slightly with earth and thickly with mulch, watering occasionally if necessary. When ready to plant, make use of those tubers only which have begun to sprout, or which show signs of development in the eyes, and you will get a stand at once, while if seed be taken at random from your stock of potatoes, many of them will fail to germinate till too late to produce anything. For this planting, the tubers should not be cut, as they would be more liable to rot.

———In the flower garden, watering, weeding and tying up plants are the principal operations; but roses and other shrubs may still be layered; also, such herbaceous plants as verbenas, petunias, salvias, etc. Dahlias may be topped to cause them to throw up new flower stems and chrysanthemums to make them stout and

bushy. Save seeds, to be put away in paper bags, neatly labelled. House plants, whether in pots or in hanging baskets, will require unremitting care and a skilful regulation of light, shade and moisture, modifying the treatment to visit the natural habits of the different species. The coleus will need and repay special attention.

Raising Onion Sets—A New Plan.

Mr. Wm. C. Pelham, of Maysville, Kentucky, has made public through the *American Agriculturist* a new method of raising onion sets. It is essentially this:

He selects a level and dry piece of ground. His ground is rich alluvial loam, but the character of the soil is of no special importance. Beds are formed two feet wide, with a path of one foot between. The "beds" are excavated to the depth of two inches—or, in other words, the path or alley between is two inches higher than the beds; the bottom of the beds is nicely smoothed with the back of a spade, so as to present a level surface whereon to sow the seed. The seed is sown so that from fifteen to twenty seeds will cover a square inch. If the surface of the beds was sprinkled with plaster or white sand, the seeds, which are black, could be sown more evenly. After sowing, the seeds are covered with two inches of pure clean sand, which brings the beds and paths to the same level. The whole is then rolled with a light roller or patted down with a spade. The advantages of this plan are, that there being no seeds of weeds in the sand, the labor of weeding is entirely saved, and the sets when matured are far more easily harvested from the clean, soft sand than from the hard-baked surface which most soils present after a season's rains and sun on a surface that cannot be stirred.

The Wonderful Montecito Grape Vine.

About four miles from the town, in the valley of Montecito, grows the now famous grape vine, one of the wonders for the tourist in Southern California. It is the largest on record. It measures four feet four inches in circumference at the ground, forty-one inches two feet from the ground, and rises eight before branching out; then spreading with extreme luxuriance, its branches cover more than five thousand square feet, and are supported by fifty-two trellises. The largest branch is thirty inches in circumference, and were it not for frequent pruning, the branches would extend indefinitely in every direction. It is of the Mission variety and exceedingly prolific, producing annually from five to six tons of grapes, which hang in massive clusters beneath the trellises, the effect of which, in the mellow autumn time, excites admiration and wonder. It is claimed that it has produced 7,000 bunches of grapes, varying from one to four pounds in weight each. A bean was put in a vase for every bunch picked until the beans numbered 7,000. It grows on a sunny slope at the foot-hills, commanding a fine view of the rugged mountains in one direction, and in the other the lovely Montecito Valley, with glimpses of the blue Pacific. The vine is irrigated by waters from the hot springs, a few miles distant, and the country about the vine is very beautiful and Mexican in its natural and artificial surroundings.

There is a beautiful legend attached to this famous grape vine which we may publish at another time.

Troth's Early Red Peach.

Though not among the best in quality Troth's Early Red is deservedly popular as a market peach, it being early, handsome, high colored and bearing transportation well. It is a round, red, freestone peach, with a white flesh, red at the stone—flowers small; tree thrifty and a good bearer. Fruit ripens here in June. [*See Frontispiece.*]

Seasonable Orchard and Garden Notes.

The Rhubarb or Pie Plant.

We confess that it has been a question with us whether it is worth while to attempt to cultivate rhubarb in our climate—at least in the South Atlantic Coast region. Hitherto our trials of it have been attended with indifferent success. We have been able to get a few small leaf-stems for use from two or three plants out of the dozen or more set out, and invariably most of the plants have died before fall. This was not encouraging; but we determined to try again, and preparing a small bed with special reference to the crop, we procured and planted, last fall, a dozen good roots, mulching the ground with stable manure to prevent the crown from being injured by frost. The result is as fine rhubarb as can be found in any Northern garden and an abundant supply for the family. The secret seems to lie in a bed of rich soil, composed largely of vegetable mold (from composted leaves, weeds and trash) manured heavily, and *two feet in depth.* We think now—but beware of hasty generalization—that we can grow rhubarb, if we only be willing to take the trouble of properly preparing the soil for it. But will the roots withstand the heat and drought after the leaf stems have been cut for use? We shall see. We think they will, if we do not cut too closely.

Northern Editors and Southern Inquirers.

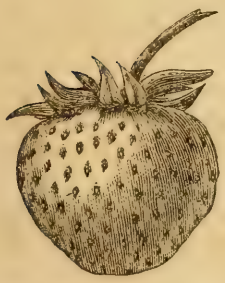
We are sometimes amused by the replies of the editors of northern agricultural magazines and papers to the inquiries of their confiding southern correspondents, for whom we feel a little pity, but more contempt. They get as much information as they deserve or have any reason to expect, when they seek instruction in cotton culture or the planting of tanyah, jute, Japan peas, etc., in New York or Boston, passing by the publications of their own region, the editors of which have at least the opportunity to make themselves familiar with these peculiarly Southern objects of cultivation and their proper treatment. So when "W. F. C." writes from South Carolina to the New York *Weekly Sun*, for light on the cultivation of the Japan pea, we are not very sorry for him when our friend Fuller, its accomplished agricultural editor, has the grace to admit that he does not possess the desired information. "W. F. C." probably never heard of the RURAL CAROLINIAN and does not know that its editor and others in this State, as well as elsewhere in the South,

have cultivated the Japan pea for years, and that it is not grown and can not be grown at the North.

Raspberries for the South.

If our tables are not supplied with an abundance of this delicious fruit from the middle of May to the tenth of June, or later, it is our own fault. We have only to properly plant, prune and cultivate the plants and they will give us their crops in due time, with only such partial failures, in unfavorable seasons, as all other objects, of cultivation are liable to. The black cap varieties are the surest for our climate, perhaps, and of these Large Miami or Mammoth Cluster is the best; but the Philadelphia and Clarke (red) have never failed with us to give satisfactory results. We now have on trial Herstine and Saunders, which promise well. The raspberry, however, in our climate, requires partial shade and should be planted on the north or east side of a fence and mulched in summer. With these precautions and a reasonable share of attention there need be no failure; and yet how few raspberries are raised in the South!

Lennig's White Strawberry.



Among the most delicious and highly flavored of all strawberries—pronounced by some best of all—is Lennig's White, known also as White Pine-Apple, Albion White and White Albany. It is not entirely white, as its name might seem to imply, but pinkish or rosy on the sunny side, and white or nearly white, on the other. Fruit, medium in size, roundish conical, obtuse or compressed; seeds, conspicuous; flesh, white, melting, with a delicious and refreshing pine-apple flavor; plant, vigorous, and a moderate bearer. As grown in our garden, we do not consider it quite equal to Seth Boyden in flavor, as it certainly is not in size or productiveness, but it is a variety we should be sorry to lose.

How to Eradicate Nut Grass.

When the agricultural editor of the New York *Weekly Sun*, who generally "knows what he is talking about," says in reply to a Southern correspondent, that "thorough cultivation will eradicate nut grass," we conclude that either he is speaking of a very different plant from *our* nut grass or coco grass, (*Cyperus rotundus*, L., Var. *hydra*, Gray,) or that by "thorough cultivation" he means hoeing at least once a day; for every farmer and gardener in the South well knows that the more thorough the cultivation, (in the ordinary sense of the term,) the better (or worse) the coco grows, and that nothing serves so well to propagate it as to plough and replough, with a view to destroy it. Shade, however, will eradicate it, the only practical difficulty being to make the shade perfect and persistent enough. Clover, where the land will produce a heavy crop, and it will withstand the heat and drought of summer, so as to ensure continuous shade, furnishes the best means of getting rid of the pest.

Excerpts and Comments.

A Simple Orchard Key.—A correspondent of the New York *Tribune* having found the common plan of trusting to labels on fruit trees unsatisfactory adopted the following system: "My trees," he says, "were planted, of course, in rows each way. One way I numbered the rows by figures; the other way I distinguished them by small letters; and the varieties were distinguished by capital letters. At first I used geometrical figures as symbols for the varieties, but the capital letters answer exactly the same purpose. I then entered in a page of my diary a record of my orchard, of which the following is an extract:

Rows.	1	2	3	4	5	6	7	8	9
a	A	A	A	A	A	B	B	B	B
b	B	B	B	B	c	c	c	c	c
c	D	D	D	D	D	E	E	E	E
d	F	G	G	G	G	G	G	G	G

and so on through the 13 rows. At the foot of the record I entered a list of the varieties planted, with the letter belonging to each adjoining; thus, Early Harvest, A; Baldwin, B; Spitzenberg, C; R. I. Greening, D; and so on. On reference to my Key, I found that the fifth tree on row B was a Fallawalder, and the fifth on row C was a Northern Spy, and every tree was thus easily identified. A copy was posted on my barn-door and another in the granary, so that it was easily accessible at all times."

We seldom rely upon labels, even in planting seeds in our garden, but number or letter our beds and rows and note every variety put into the ground on a suitable diagram in our garden note book.

The Horticulturist Astonished.—Think of a fig tree (in California) set out when 6 inches high, and two years afterwards measuring 12 feet high, with a head 7 feet across, and trunk 9½ inches in circumference. Yet this is vouched for by a correspondent of the *Rural Home*. And now comes another bigger story: A California gardener has in his garden two plants of the Ricinus, planted 13th of May, and grown in one season to 17 feet. One of them had six stalks, each 11 feet high, and all 12 feet across, the trunk measuring 13½ inches in circumference, and bearing 16 spikes of seeds, each 12 to 28 inches in length. The whole appearance of the plant is described as very showy and highly ornamental. The stalks and stems are a blood-red, the spikes a most brilliant scarlet, and the broad magnificent foliage, a beautiful metalic green, made altogether a very attractive appearance.

These are certainly instances of luxuriant growth and may seem to the Northern reader truly wonderful, but here, neither of them would be considered at all remarkable. On our own grounds here in Charleston, plants of the Ricinus (*R. Borboniensis arboreus*) have made a growth of nearly twenty feet in a single season, from seed planted in the open ground in March or April. The fig often makes a growth of from six to eight feet in the season, and will produce and mature fruit the second summer from the cutting.

Applied Chemistry and Mineralogy.

All communications and notes of inquiry intended for this Department, as well as specimens of soils, fertilizers and minerals for analysis or description, should be addressed to Charles U. Shepard, Jr., M. D., No. 20 Broad street, Charleston, S. C.

The Phosphatic Marls and Rocks of South Carolina.

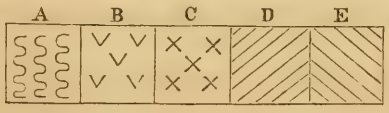
Notes on the Composition, occurrence and origin of the Phosphatic Marls and Rocks of South Carolina, with some observations on Rock Guanos from other sources.

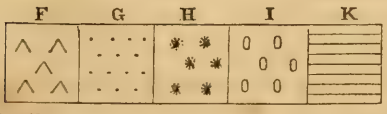
The writer proposes to publish from time to time in this Journal, a series of articles embracing the results of many hundred analyses of South Carolina phosphatic rocks and marls, and the experience obtained by a considerably extended observation of the land and water beds, together with some investigations of foreign rock guanos.* The special incentive to this step is the desire to remove as much as possible, the uncertainty which, even to this day, fills the minds of many scientific and commercial men as to the extent and value of our beds.

The Phosphatic Marls of South Carolina—their Occurrence and Composition.

Mr. A. de Caradeuc, of the South Carolina Railroad Company, has very kindly put into the writer's hands a series of interesting specimens of marl, rock and other material, raised during the boring of the Artesian well at Sineath's Station, 13 miles from this city, on the South Carolina Railroad. Mr. de Caradeuc merits the warmest praise for the pains taken in the acquisition and preservation of these specimens, which may play an important part in establishing the origin of our valuable and interesting phosphatic beds.

EXPLANATION OF THE SIGNS USED IN THE SUBSEQUENT DRAWINGS.



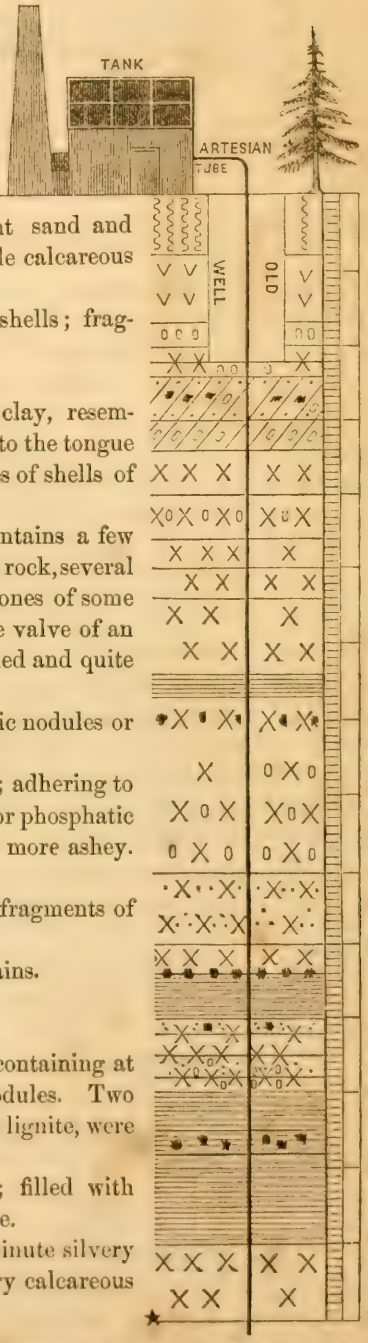


A. Soil and subsoil.
B. Clay.
C. Argillaceous marl.
D. Marl.
E. Sandy Marl.
F. Sand.
G. Phosphatic sand.
H. Phosphatic nodules.
I. Shells.
K. Rocky marl.

*The subject will be considered under the following heads:

1. The Phosphatic Marls; their occurrence and composition.
2. The Phosphatic Rock; its occurrence and composition.
3. Foreign Rock Guanos; their origin, occurrence and composition.
4. Origin of the Phosphatic Marls and Rocks of South Carolina.

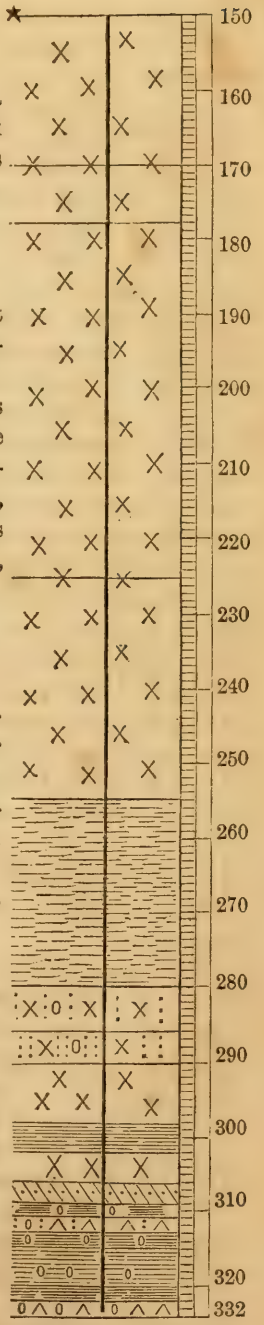
Description of the different strata perforated by the Artesian Well at Sineath's Station:



Depth of Occurrence.	
To 8 feet.	Soil and Subsoil.
8 to 17	Light ash colored, iron stained clay, with much fine transparent sand and minute scales of silvery mica; little calcareous matter.
17 to 20	Bed of broken, recent appearing shells; fragments white, in a darker clay.
20 to 22	Bed of blue marl.
22 to 24	A tough, plaistic, gray, marly clay, resembling marsh mud; does not adhere to the tongue or give argillaceous odor. Traces of shells of same description as above.
24 to 30	Rich buff, very friable marl; contains a few rounded grains of black phosphatic rock, several nodules of black phosphate and bones of some small land animal, with one entire valve of an ostrea (2 inches long) much bleached and quite fragile.*
30 to 34	The same, but without phosphatic nodules or grains.
30 to 40	The same, but more argillaceous; adhering to the tongue, shows neither fossils nor phosphatic grains to the naked eye. Color more ashey. An argillaceous marl.
40 to 46	Similar to the last, but contains fragments of shells.
46 to 54	Tea-colored, marly clay, no remains.
54 to 64	The same.
64 to 67	Hard, rocky marl.
67 to 90	Similar to that at 50 feet. But containing at 70 feet a layer of phosphatic nodules. Two fragments of charred wood, black lignite, were raised at 80 feet.
90 to 100	Clayey marl, came out as mud; filled with black, rounded grains of phosphate.
100 to 104	Tea-colored clay, with a few minute silvery scales of mica. At 104 feet a very calcareous phosphate, quite hard.

* From twenty-four to forty-six feet seem to be characteristic of the so-called "Great Carolina Marl Bed," heretofore called Eocene, but which, after all, may turn out to be much more recent in the Geological series.

Depth of Occurrence.	
104 to 110	Rocky Marl.
110 to 112	Phosphatic nodules (one four inches thick,) a fragment of tortoise bone converted into black phosphate, and a mass of phosphatic pebbles mixed with argillaceous marl. No oyster shells.
112 to 115	Clayey marl.
115 to 118	The same with shells and phosphatic grains.
118 to 120	Clayey marl.
120 to 128	The same, but hard. From 125 to 128 feet occur phosphatic nodules, several inches in diameter, also a piece of bone.
	These phosphatic fragments are remarkable, as showing, perhaps, that the change from carbonate to phosphate of lime, is in progress from without inwards. The imbedding rock is a hard, buff marl. It appears as if the phosphate was secreted out of the marl around a central ball, as flints form in chalk.
128 to 140	Hard, rocky marl.
140 to 255	Clayey marl.
255 to 280	A pale buff, firm marl.
280 to 286	Numerous water-worn pebbles of black phosphates, some as large as walnuts, held together by argillaceous marl, containing shells.
286 to 290	Gravelly stratum of (two-thirds) black phosphatic grains, with fragments of shells and marl.
290 to 298	Fine, almost chalky, argillaceous marl.
298 to 302	Hard, rocky marl, with grains of black phosphate.
302 to 305	Rich, clayey marl.
305 to 306	Marly sand, largely mixed with a coarse, clean white sand, and a few black, rather large, rounded grains of phosphate.
306 to 307	Almost white aggregate of fragments of shells.
307 to 309	Coarse grained sand, and a tolerably pure and compact, crystalline limestone, mingled with coarse siliceous pebbles and black grains of phosphate.
309 to 311	Much the same, only forming a firmer rock, made up of closely superimposed bivalve shells, with black phosphatic grains.
311 to 313	A very coarse, pebbly sand of clear quartz, with fragments of bivalve shells, and pebbles and grains of black phosphate.



Depth of Occurrence.	
313 to 320	A nearly compact, sub-crystalline, whitish limestone, with closely imbedded bivalve shells, firmly enclosed. Also, fragments of an anterior cast of the common bivalves, found everywhere (in this region) in and under the nodular bed, converted into phosphate. Between 315 to 316 decomposed shells.
320	Same as above, only dark grey in color, in freshly broken fragments, mixed with coarse quartz sand.
321 to 322	Fragments of a compact and firm limestone, with coprolitic, phosphatic nodule.
322 to 323	Crystalline limestone, with casts of shells—no phosphate.
323	Like the last, but broken into fragments and mixed with coarse sand and few scales of shells.

Mr. de Caradeuc has favored the writer with the following information concerning the artesian well of Sineath's Station. "A heavy chisel six inches wide was used to cut and loosen rocks or earth at the bottom, the loosened material being brought to the surface in buckets, (six feet long and six inches wide,) provided with a valve at the bottom. The well tube has an internal diameter of six inches, and was used in sections of five feet in length, the pieces screwing into each other. The total length of the tube is 40 feet, (eight sections,) extending from 12 feet above, to 28 feet below the bottom of the old well. The remainder of the bore is not tubed.* The water rises to the top of the cast-iron tube, that is, to about 8 or 10 feet from the surface of the earth. I have no data to which I can refer as to the quantity used per diem. Our steam pump, however, after 12 to 14 hours steady work, is unable to sensibly diminish the quantity of water in the large well, in spite of one or two severe dry spells we have had, when the surface water had all dried up."

The writer is under obligations to his father, Prof. Charles U. Shepard, Sr., for much advice and assistance in the above description of the material from the different strata.

The results of the analyses of the water, surface and artesian, and of the marls and phosphate rocks raised during the boring of the well, will be published in a subsequent number of this journal. S.

Laboratory for Analytical Chemistry, No. 20 Broad st., Charleston, S. C.

The sulphate of ammonia is an excellent manurial liquid to apply (once a week) to flowering plants, giving to the foliage a dark green luxuriant and healthy appearance. It is economical, clean and easily applied. Prepare it in the evening before using, by dissolving one ounce of ammonia in two gallons of water.

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* Note.—The tubing of the well to the depth of 50 feet excludes the possibility of phosphatic masses from the superficial layer (at 26 feet depth) having dropped into the bore, and thus given rise to erroneous impressions of deeper strata.

Answers to J. L. Wright's Questions.

1st. Fine, dry garden earth is the cheapest and most available absorbent. Charcoal, rotten wood and land plaster (the hydrated sulphate of lime) may, also, be employed to advantage.

2d. Sulphate of ammonia is less liable to volatilization and cheaper than either the nitrate or carbonate of ammonia; otherwise, it is less valuable for agricultural purposes.

3d. The compost heap should contain sufficient vegetable matter (straw, stalks, &c..) to render it loose and easily penetrable by the atmosphere. It should be covered with a layer of dry and fine garden soil, to which land plaster may be added. A liberal use of the latter suffices to retain the ammoniacal gasses generated in the heap. Save all urine and liquid manure and pour them on the heap.

Natural History Applied to Agriculture.

Specimens of insects, securely packed, (according to instructions given in The Rural Carolinian, for October, 1870,) with letters of inquiry, entomological notes, etc., should be addressed, (post paid,) to Mr. Charles R. Dodge, Washington, D. C.

Corn Insects.—No. III.

In our March number, we gave the natural history of an insect found in the stalks of maize, known in the South as the "bill bug," and, doubtless, also, as the "bud worm," (though as yet we have not seen the last named insect,) and in our last number we gave an illustrative article on the corn worm, (in the ear.) There are, however, other insects which we desire to mention while we are on the subject, but which should have been given, perhaps, before the previous articles, as they are most injurious in the early stages of the plant's growth.

The first of these is the seed-corn maggot, *Anthomyia zeas*, Riley, which works under ground, on the seed-corn after planting. It is a *Dipterous* insect, belonging to the family of flies, and closely related to the onion maggot, which works upon the onion crop in the same manner. The worms attack the kernels of corn, gnawing into them and causing them to rot, after which becoming full fed, they leave them and burrow into the soil, where they transform into little hard oval pupæ, about a quarter of an inch in length, and in about a week the fly appears.

The perfect insect is about the shape and size of some of the smaller flies that abound in our houses, in fact might be readily called a house-fly by the casual observer. The insect was described, and its natural history given, for the first time, about five years ago, by Mr. Riley, who at that time stated that it was a new foe to corn. As a remedy, or rather as a preventive, in localities where the insect

is known to be injurious, he suggests soaking the seed before planting, in gas, tar, or copperas.

Wire-worms frequently do great damage to corn planted on sod land, by boring into the kernels, especially if the weather is cold, wet and backward. These worms are the larvæ of beetles belonging to the family *Elateridæ*, commonly known as snapping, or spring beetles. The eggs are deposited by the females under ground, and the larvæ are from two to five years in coming to maturity, when they descend deep into the earth, form oval cells of particles of soil, and change to pupæ. The larvæ are long, slender, yellowish, cylindrical worms, the head somewhat flattened, and wedge shaped; the jaws black. The beetles are long and slender, the annexed cuts showing their general shape and characteristics. (Fig. 1, *Agriotes manchus*; Fig. 2, *Melanotus communis.*)

Fig. 1.

The insects are called snapping beetles, from their habit of snapping or springing into the air to recover themselves, when happening to fall on their backs.

Low moist land, or land that has remained in grass for a number of years, is most liable to their attack; grass seems to be most attractive to them. When new land is broken up, corn is generally first planted, and is, therefore, the crop oftenest destroyed by wire-worms, and this worm has become more generally known in our country through its injury to corn than any other crop, although they injure wheat, barley, oats, potatoes, turnips, and, in fact, there are but few crops they will not attack.

Fig. 2.

In regard to remedies, in the first place, it is almost useless to re-sow when the crop has been destroyed by them, until repeated ploughing, winter frosts, poultry and birds have partially cleared the soil, and as the worms are several years in attaining their growth, they will not increase unless new eggs are deposited, and Fitch says "there is no danger of this from September to March."

Wire-worms are very fond of potatoes and it has been recommended to use slices of the tuber as traps, but this would not be practicable in a large field. Hand picking has been practiced with good effect, the work being done by children. All plants observed to be dying are dug up, and the worms placed in a proper receptacle, and afterwards destroyed. An English authority, Curtis, speaks of 60,000 worms being taken in this manner on three acres of drilled wheat. The work was done by women at a trifling expense of 10d. per 1000.

White mustard-seed planted on land infested by wire-worms is said to protect any crop that may follow it, by eradicating them, if all other weeds are kept out. They cannot feed upon the roots of the mustard, and in absence of other food perish. Fall ploughing is recommended. Fitch, says "an effectual method to rid the land of wire-worms, is to plough very late in the fall, and work thoroughly the next season, until time to sow buckwheat, which is sown the next year also—following the same plan of fall ploughing and culture—will totally eradicate them, giving at the same time two valuable crops." Heavily rolling the ground or driving sheep over it is a regular practice with some farmers in England and Germany, to preserve the crops from this pest.

Rape cake broken into small lumps, and spread over the ground, (for an acre, about three hundred weight,) and ploughed in before sowing, has been used in

Canada. An experiment with hog manure, dropping it into the hills in certain rows resulted in the entire immunity of these rows from the insect. Guano is also said to be offensive to the worm. Salt has often been recommended but has been showed by experiment to be useless, besides being injurious to the land when used in large quantities.

Cut Worms often play sad havoc with young corn, cutting off enough stalks in a single night to ruin all prospects for a good crop, without re-planting. The eggs are deposited in late summer upon the ground, and the worms hatching, crawl into the ground to feed upon roots and shoots of herbaceous plants. During the winter they lie a few inches under the surface, about half or two-thirds grown, renewing their activity as spring approaches. They do not become troublesome, however, and acquire the name "cut worm" till nearly fully grown, when they acquire the habit of crawling from the earth at night and cutting off the young and tender shoots of corn, and other plants as neatly as with a sickle. Before daylight, however, the marauder crawls into the ground again, a few inches from the plant it has destroyed, and, with a little careful observation, it is an easy matter to find the hole, and call the rascal to account.

As soon as mature it forms an oval cavity in the earth, changes to a chestnut brown pupa and in a few weeks comes forth a dark sombre moth or miller, with kidney shaped spots on the fore wings; they are often met with in our houses at night. There are a great variety of these worms, Mr. Riley enumerating ten distinct species in Missouri.

As to the best manner of attacking these foes to the corn crop, it is not an easy matter to determine. When they are very numerous, if the crop is to be saved at all, it is by active means—no less than going over the field and digging out the worms and destroying them; but this is a herculean task, and we doubt if but few farmers would take the trouble, although they might not hesitate to spend the same amount of time in exterminating noxious weeds that could be gotten rid of in no other way. Holes drilled about the hills with an old hoe handle make nice traps for them, and, as the worms are unable to crawl up the smooth sides, another dose of hoe handle in the same holes the next morning will finish them. As a precautionary measure, it is well in planting to make provision for the worms, in the words of the old oft-quoted maxim:

> "One for the black-bird and one for the crow,
> Two for the cut-worm, and three to grow."

Answers to Correspondents.

Orange Twigs—C. C. W., Eau Gallie, Florida—1. The orange twigs sent by you, and found covered with yellowish excresences or exudations, were not injured in the least by insects, and we cannot give the cause. The specimens were handed to a microscopist for examination, and he has not yet reported. Can you send a few more specimens, and please state if the disease is widespread in your locality, or only confined to a few trees.

2. The large bug which you found in salt water, and which you ask if in his

right element, is the "Gigantic water-bug," *Belostoma grandis.* It is an aquatic insect feeding upon other insects, and may, therefore, be called beneficial. It belongs to the order *Hemiptera* or plant bugs, &c., which have no jaws, but are provided with a beak or piercer instead. Thanks for the specimen. Let us hear from you again.

Mining and the Mechanic Arts.

Manufactures at Home.

"All the South wants is manufactures," is a secular text from which everybody now-a-days preaches, but the almost universal meaning is, the South needs *cotton* manufactures. The twirling spindle and the flying shuttle are to redeem the land. Well, why should they not? We grow the raw material, we have the water power and the labor, and we consume the manufactured article; then why should we not also produce the fabric? Echo at present answers, why?

But this forebodes nothing amiss, for slowly but surely, the South is becoming more self-reliant. The present South is but an infant, though she is a child of intelligence and vigor. Her wardrobe is gathered from many quarters, and Lynn must be consulted as to the style of her shoes; but before the age of "sweet sixteen" she will have matured into womanhood. Evidences on all sides evince this fact. Her agricultural progress is only surpassed by her mineral developments, and neither exceed her continued investments in manufactures.

In all of our towns and cities private enterprise, though on a small scale, is manifesting the profits realized from manufactures other than those of cotton. In Charleston, for instance, the manufacture of doors, blinds and sash, is almost a specialty. Cargoes of sawn lumber are brought out from the frozen North, and by the power of steam are squared, planed, sand-papered, morticed, tenoned, grooved, and framed into the most beautiful doors or blinds or sashes by skeleton machines, that appears to need only flesh and covering to make them intelligent beings so smoothly and perfectly do they work. Recently in Atlanta, Ga., I was admiring some beautiful doors and asked where they were made? The owner replied, "I tried Savannah, Nashville, Cincinnati, New York and Charleston, and bought in the last place." Mr. P. P. Toale, of Charleston, is now making some magnificent doors for a Masonic Temple and the Mercer University, both now being erected in the City of Macon, Georgia.

Away upon the north side of what might be called the Boundary street of Charleston, stands a frame building in a lot enclosed by a high, close board fence on the single gate of which is printed "No admittance to anybody." This invitation to stay out, made me anxious to get in; so by perseverance I accomplished my desire, and on entering the building, much to my surprise saw standing in one corner of the hall, a small upright engine not larger than a good sized wash pot, propelling pullies by the dozen on hundreds of feet of shafting, and driving a great

deal of machinery more ponderous than the engine itself. This building is the tin factory of Mr. H. A. Duc, who possessing that peculiar genius that suggests a want, and the inventive power to supply it, has made most of his own dies, and doubtful of the benefit of patents reserves to himself his most valuable inventions, not even allowing parties to see them work. There is no such tin manufactory in the South, and New York prices are all that are asked for its wares. In this establishment where pan handles, bucket tops, milk pans and many other articles are made from the sheet tin by a single stroke of huge machinery without the aid of solder, very little of his parings can be called waste material. By the aid of this almost perfect machinery one man can make fifty dozen half-gallon buckets per day; or seventy-five dozen pint cups, or four hundred dozen seamlees tin pans. This seems almost incredible, but the prices warrant our believing this report. Minature tin cups at nineteen cents per dozen, and quart coffee pots at ninety cents per dozen, and other tinware at proportionally low figures are inducements to Southern merchants to save freight and insurance from New York.

The City of Charleston has many other private mechanical enterprises that only ask patronage from Southern dealers to convince the world that at the South we have mental as well as material resources surpassed nowhere.

D. WYATT AIKEN.

A New Invention—McKinlay's Portable Rice Mill.

Since the close of the war the cultivation of rice in the interior has become more general than previously. In fact, there is scarcely a farmer or planter in this and the adjoining States, who does not cultivate a patch of rice for domestic use. An obstacle in the way of a more general cultivation of this almost indispensable esculent, has been the difficulty and expense attending its proper preparation for the table. The old fashioned mode of hulling and cleaning it by hand in a wooden mortar, has become too slow and tedious, besides it does not impart to the grain that pearly whiteness given it by the various processes it is subjected to in the course of milling, at one of our city rice mills, where it passes through three distinct machines before it is in a condition to be marketable.

Mr. Peter McKinlay, of this city, whose inventive genius is always planning improvements in rice mill machinery, has supplied the great want in this important particular. He has invented a portable rice mill, which will clean three bushels of rice in an hour, quite as well as is done by any rice mill. The machinery comprising the invention which we are about to describe more minutely, is a combination of utility and simplicity, desideratums too often overlooked by inventors, who appear to think the more complicated they make their inventions the more attractive they will be, overlooking the fact that the greater the complication, the more costly will be their manufacture. What is wanted now-a-days in machinery, is simplicity, durability and cheapness. Machines possessing these qualities seldom fail in finding ready sales, because persons with ordinary intelligence and limited means can purchase and operate them.

Mr. McKinlay's portable rice mill consists of an iron frame about four feet square, with an iron trough at each side of the frame. In each of the troughs there is a perpendicular lever, with an elongated and slightly rounded base, footed with india rubber or wood, (india rubber is preferable.) The levers are moved backwards and forwards in the troughs by means of cranks attached to a pulley. The rough rice is put in the troughs, and the motion of the levers to and fro, quickly rubs off the chaff and flour, and, at the same time, polishes the rice. The chaff and flour pass off from the troughs through a wired opening in the bottom, leaving the rice in the troughs. Thus the rice is hulled, pounded and polished by one process, which requires three distinct processes in an ordinary rice mill.

One of these mills can be seen at the machine shops of Messrs. James M. Eason & Bro., in this city, where it has been erected by the inventor. We were present at a recent trial of its merits, and must say in all candor, that it appears to be just what is needed by those who grow rice for domestic use, or in small quantities for sale, at too great a distance from a rice mill to have it prepared for market, except at a cost which would consume all the profits. It can be put up any where, occupying, as it does, but little space, and can be worked by either horse, water or steam power. One of them in a neighborhood, and worked by the same power that runs a cotton-gin, would not only be a source of great profit, but a great accommodation, inasmuch as it would enable those who grow rice in too small quantities to make it an object to send it to a rice mill, to have it cleaned at a moderate cost, from time to time, as they may desire.

At the trial alluded to, thirty-two pounds of rough rice were placed in each trough, and cleaned in the remarkably short time of twenty-six minutes. Some of the rice was cooked in the usual way, and presented as white and pearly an appearance as that which is cleaned in the ordinary rice mill, where it passes through three distinct processes, as before said.

There is another claim for this new invention of Mr. McKinlay, worthy of mention. It utilizes the chaff of the rice, which is usually wasted. The process of rubbing the chaff off the grain necessarily reduces it to the fineness of coarse flour, which passes through the wired bottoms of the troughs, mixed with the flour from the rice and such small pieces of the grain as break off during the process of cleaning, thus converting it into an excellent article of feed for stock.

We hope Mr. McKinlay will now meet with that reward which his inventive genius justly entitles him to. He has devoted the greater portion of his life to designing and perfecting improvements in rice mill machinery without benefit in a pecuniary point of view. The good results of his improvements in the milling of rice are acknowledged in this country as well as in South America and England, where they have been applied.

Before closing we will state that Mr. McKinlay was the first person to compress cotton by hydraulic power, in Charleston. As early as 1838, he operated a hydraulic cotton press in this city. The process, which has now become universal, was then looked upon with great disfavor, some alleging that it would reduce the commerce of the place by enabling three ships to carry as many bales of compressed cotton as it would require five ships to carry in an uncompressed state,

while others said it would destroy the utility of the staple, thereby rendering it useless for manufacturing purposes. It was at this period that Mr. McKinlay urged the use of iron ties for cotton bales, instead of rope. He was so fully impressed with the utility of the iron tie, that he put iron bands on some of the bales which he compressed, similar to the iron bands which were then used on bales of goods imported from England. The universal use of iron ties for cotton bales, together with the equally universal custom of compressing cotton, are evidences of the inventive mind and far-sightedness of Mr. McKinlay, who has been permitted to live to see that which was condemned forty years ago, as injurious and impracticable, to be looked upon as beneficial and indispensable.

The Alden System of Fruit Drying.

We copy from a report made to the New York Farmers' Club by Dr. J. V. C. Smith, the following description of the Neshanic (N. J.) Fruit Drying Factory:

The factory at Neshanic, (Hon. John G. Schenck, proprietor,) has three evaporators, one small, three by three feet, the others large, five by five feet. During our visit, the small one was working on apples for a government order, and was using four bushels per hour. The larger ones were working on cores and skins, and on apples not considered large or good enough for the market as evaporated fruit. These are sold to the Manhattan Preserving Company for the manufacture of Alden's jelly. The building is three stories high and a basement. In the basement was the heating apparatus; on the first floor apples were stored, also the cutting and paring tables, and here the trays were run into the evaporator; the second floor was used as a storing and packing room; in the third was the exit of the fruit. We saw that which had been put on at 7 o'clock ready to come off at 12, and it was clear, bright, and did not have the dry, leathery feeling of the common dried fruit. We also saw a large quantity on the second floor, which was equally clear, white, and excellent to touch, soaked in water, and its natural aroma was developed. We also ate pies and sauce made from this fruit, and they could not be distinguished from those made direct from the raw apple. We were informed that the Company is selling the small evaporator at $1,000. The cost of buildings will vary in different sections, but the whole investment can hardly exceed $2,000. This machine is capable of working 300 bushels of apples per week in day time, which will make 2,000 pounds of evaporated, marketable fruit, and 700 pounds of cores and skins. The evaporated apples is now selling by wholesale at fifteen cents per pound, and the Manhattan Company pay six cents for the dried cores and skins. Hence:

300 bushels of apples at 30 cents	$90 00
One man, (per week)	12 00
Eight girls, (per week)	40 00
Half ton of coal	7 00
Interest on Investments of ten per cent	10 00
Contingencies, five per cent. of above	7 95
Total	$166 95
Product:	
2,000 pounds evaporated apples at fifteen cents	$300 00
700 pounds cores and skins at six cents	42 00
Net profit	$176 05

If we deduct from this, cost of barrels, hauling, freight, incidentals, &c., we cannot possibly reduce this amount to less than $150. At this rate it is evident that in any section where 3,000 bushels of good apples can be obtained at thirty cents per bushel, enough to run the small evaporator for ten weeks, there can easily be made a profit of $1,500, which is thirty-three and a third per cent. upon the original investment. The Alden process has heretofore been confined to a few localities because of the large cost of the apparatus, but the invention and production of this small evaporator obviates that difficulty.

We also saw a large quantity of squash for pies, which had been passed through the evaporator. It was equally as good in all respects as the apples. We saw other fruits and vegetables in smaller quantity. From these it is evident that the evaporator, as above, need not be confined to apples alone, but that before and after the season of apples, other fruits, and all the various vegetables, might be made a source of additional profit.

To sum up, the advantages of the Alden process of preparing fruit so as to keep in any climate and at all seasons, are: First, the fruit retains its natural flavor. Second, the process is conducted quickly, and in the dark, hence the fruit cannot change color, because it has been deprived of the water, through which oxygen acts, before it reaches the light and air. Third, it may be prepared very cheaply, and in the market it brings a higher rate than any of the dried fruits; it enables travelers, or ships on long voyages, to take with them in a small space fruits and vegetables having all the properties of those fresh from the garden. Fourth, being evaporated out of the air, flies do not speck them, nor does dust become incorporated in the pores. Fifth, by the nature of the process, a part of the starch of the fruit or vegetable is converted into grape sugar, hence the articles evaporated by the Alden process require less sugar in cooking than even the fresh material. Sixth, the meshes of the trays being made of twine, no taste is imparted to the fruit; and, seventh, there being no moist acid to act on either tin or wood, in which it may be packed, the Alden fruits or vegetables are absolutely free from any taste or smell of tin or lead poison, or anything except those flavors and acids natural to them.

Industrial Notes and Memoranda.

Spartina vs. Esparto Grass.—All efforts to introduce the esparto grass into the United States have failed. We have had plants growing here at different times, but they have uniformly died out within two years. Others have had similar experience. Well, perhaps we have something right under our own noses which will serve the same purpose quite as well. On this point Mr. Wm. Saunders says:

Some years ago, when we were collecting facts and figures concerning this grass, we learned that an establishment in the West was using the *Spartina cynosuroides* for paper, and that some English paper-makers who were using it, and who had formerly worked the Esparto of the Mediterranean, gave it as their opinion that the Spartina made as good, if not better, paper than the Esparto. I have not heard anything about it for some time, but it is worthy of further attention. I have frequently suggested the importance of the Department being in full possession of all facts bearing on this question. I have heard that this Spartina grows in immense quantities on the Mississippi bottoms.

Value of the Prickley Pear.—A correspondent of the *Mobile Register* gives the following recipe for hardening tallow, which suggests another undeveloped resource in our Southern country. This is the recipe:

Take the common prickly-pear and boil or fry it in the tallow, without water,

for half an hour, then strain and mould. I use about six average sized leaves to the pint of tallow, (by weight one pound of leaves to four of tallow) splitting them up fine. They make the tallow as hard as stearine, and do not injure its burning qualities in the least.

The common prickly pear, known to botanists as *Cactus vulgaris*, is abundant in many localities and flourishes on the poorest sandy lands.

TRANSPORTATION BY SPHERES.—Mr. Albert Brisbane, the inventor of the pneumatic tube for carrying packages, is now engaged in constructing a tube from the Capitol at Washington to the Government Printing Office for which work Congress appropriated $15,000 at its last session. The method of operating these tubes consists in simply exhausting the air from the portion towards which the packages are to move. The load is placed not in a car, but in a sphere which is made slightly smaller than the cylinder, and the current of air operating against it propels it forward with great rapidity. It is calculated that parcels can be sent through this tube at the rate of three hundred miles per hour.

PATRONS OF HUSBANDRY AND AGRICULTURAL SOCIETIES.

The Missouri State Grange and the Patrons of Husbandry.

The National Grange of the Patrons of Husbandry met in Washington City on the 8th day of January last. At that date the State of Missouri had but ten Subordinate Granges, and these were more dormant than active. T. R. Allen, Esq., of Allenton, Mo., represented these ten Granges at the National Grange, having previously been appointed a General Deputy by that body. By resolution, he secured the appointment of St. Louis as the place of meeting for the National Grange on the first Wednesday in February, 1874. Stimulated by this favor, he returned to Missouri, determined to organize the farmers of his State, and manfully has he effected his determination. Possessed of indomitable energy and fortunate in securing the active co-operation of judiciously selected appointees, he produced the handsome result of over three hundred organizations by the 20th of May last. On that day the Masters of nearly all of these Subordinate Granges met at Knobnoster, in West-central Missouri, to organize the State Grange, and it was my privilege to assist in the organization.

A more earnest body of men I never met. Farmers from every section of that great State were there, and though in most cases strangers to each other, there was no division of sentiment as to the object of their meeting. A single purpose had called them together, and each came thinking his presence would aid in consummating that purpose. The elevation of the farmer and his vocation; the means of developing the material interests of their State, and the general promotion of the cause of agriculture, were the ideas that pervaded the minds of that Convention. They were not parliamentarians, neither were they political tricksters, but they were yeomanry representing a constituency, that constitute there, as elsewhere in this Government, three-fourths of the population of the State. The State

Grange was thoroughly organized, and deputies were put in the field to increase the influence of the Order. At present the prospects are, that on or before the 8th day of February next, the State of Missouri will have one thousand or more Subordinate Granges. If great benefit to themselves and to the State does not result from this wide spread and systematic organization, then "straws do not show which way the winds blow."

During the organization the wants of the farmers were plainly made known, and many of their grievances were revealed in a simple, but emphatic manner. The remarkable coincidence was that these wants and grievances were the same in every portion of the State. This unanimity cannot but produce any desired end.

The Patrons of Husbandry propose to elevate the farmer socially, morally, and intellectually, and believing that there is in every agricultural community latent intelligence, which if brought to light would produce this result, they are sanguine of a most flattering future from their organization. But they go farther than this; they propose to give material aid to individual farmers, and to the farmers' interests collectively, by bringing the producer and consumer in direct communication with each other, and thereby relieve their products of those illegitimate imposts levied upon them by a class of men, who neither toil nor spin, and yet "Solomon in all his glory is not arrayed like one of them." They propose, further, to relieve the manufacturers of farm implements and other agricultural necessities, of the kindly, charitable assistance of these "lilies of the field." That all these aims are perfectly justifiable, is as self-evident as that self-preservation is one of nature's first laws; and for any man or set of men to object to this effort on the part of the farmers of our country, is worse than folly; it will only subject him and them to the unpleasant necessity of declaring their former occupation forever gone.

Patrons of the South, these men of Missouri are our brethren. They are enlisted in the same great cause with ourselves, and are anxious to assist us in consummating all of our aims. Of their superabundant products they desire you to receive a share at a price, that will be profitable to them and economical to you. The northwestern farmers are to-day impoverished by their excessive plenty. Corn at from ten to twenty cents per bushel, and meat almost for the butchering, will never pay the onerous taxes imposed by political demagogues and corrupt office seekers. Monied monopolies, and municipal regulations debar the farmer from realizing a pittance of a profit for his products. Every head of cattle, sheep or hogs, sent to market has a levy of a per capita impost of one dollar to be paid by the farmer to some "go-between," who alone is authorized to sell the farmers products; and this protected civilian "bulls" or "bears" the market according to outside pressure. Hundreds of thousands of hogs are butchered and hastily converted into bulk meat or bacon for the Eastern and Southern market, at an unjustly enhanced price after they have left the producer's hands. The pork packers of the northwestern cities establish the prices for both producer and consumer, and sometimes bind themselves over in heavy bonds to prevent reduction, if not even fluctuation in price. Millions of tons of sweet hay could be shipped South by these brothers of the northwest if our organization were complete. To-day baled clover hay can be sold at a profit at twelve dollars per ton by the northwestern

farmer, and is worth three times that in almost every Southern market. This is a thraldom which those producers cannot appreciate, and as one man they are struggling for relief. True, these producers and their consumers are too far apart, but will not the inventions of the day bring them in close proximity? In this progressive age we measure distance by time, and speak of a trip across the continent as being so many hours. Cannot, and will not this land of plenty be brought within a few hours of us? I believe it, and look anxiously for such a consummation resulting from an amicable co-operation of the Patrons of Husbandry and the transportation agencies of the country.

Agriculture is the life-blood of the American people. It may not constitute their wealth, but that they cannot exist without it is self-evident. Should producers withhold their products from market but for a few hours, whence would the nation procure relief? Transportation monopolies may easily cut off supplies by the imposition of a prohibitory tariff of freights. Financial "corners" would produce a crisis by closing the doors of their vaults. But far more terrible to us would be the effect of excluding from the Southern market the products of the northwest. That this may or will be done is not beyond the reach of probabilities. Already corn even at fifty bushels per acre does not pay for the cultivation and harvesting; wheat is an uncertain and, therefore, unprofitable crop; hay is scarcely worth the mowing and baling. Hemp and flax, once so profitable, have been abandoned as a crop; and hundreds of farmers in the northwest inhabiting lands as fertile as any on earth, and supplied by nature with almost every agricultural want are impoverished by the ownership of land; they are what is known as "land poor." Their surplus income does not pay the taxes levied upon their property.

Farmers of the South, while contemplating the condition of our friends in the Northwest, let us turn for a few moments and reflect upon our own status. Are we not enslaved by a thraldom exactly the reverse, though as oppressive as theirs? Are we as a class as independent as our vocation suggests we should be? Indeed are we not the most dependent of all men? The Northwestern farmer produces, and his products are his own, often decaying upon his hands from the lack of a market. The Southern farmer produces, and with a market at his door seldom claims his hard-earned products as his own. Debt in the shape of a lien, a mortgage, or some other direful form attaches oftentimes before harvest, and consequently he possesses, but seldom owns the products of his labor. Hence his crop is thrown upon the market, and the value of it, or market price, is set by another. A large number of Southern farmers and planters begin the year in debt to their mistaken friends, the factors; and these friends are seldom benefited by the obligation. The pay day of to-morrow has been the bane of Southern planting for lo! these many years, and no men are more convinced of this fact than the factors themselves; and far better for many of them had they never been known, and vastly better for the planters had they never employed them as factors. The financial health of the agricultural South can never improve under the existing credit system, and the creditors will never abolish it so long as the debtors make them secure in assuming the debt. Relief must come from some other source, and no other source is so aptly presented as the Order of the Patrons of Husbandry,

which cherishes the cash system between buyer and seller, as the most valuable of its many material advantages.

Then, Patrons, cherish your institution; it is rapidly becoming the very corner-stone of your profession. Extend it anywhere and everywhere throughout your vicinity. Its sure tendency is to improve your social status by preventing your accustomed isolation. It will educate you to appreciate your rights, which once known will be maintained. It will teach you that farmers are as capable of governing as of being governed, because amongst them there is as much intelligence as amongst any other class of men. And last, but by no means least, it will enable you to enter the market in fair competition with all other men; and having a clear title to the products of your own labor, you can sell or withhold from sale, as the price induces you, that price being set by yourself, and not by those who know nothing either of the cultivation of the soil, nor the harvesting of the crops.

D. WYATT AIKEN.

The Union County Granges at Work.

Some time ago an invitation was extended by the Fair Forest Grange to the other county Granges, to appoint five delegates to meet at the Court House, on the first Monday in June, for the purpose of an interchange of opinions upon questions touching the welfare of the Order. With a view of strengthening the social tie and comforting the inner man, it was suggested that each delegate should bring a plain substantial lunch.

On Monday, delegates from Fair Forest Grange, Cross Key Grange, Cane Creek Grange, Meador Grange and Union Grange responded to the call, and we had a very interesting and instructive interchange of views, in a free and easy manner, upon topics connected with our Order.

Bro. Barksdale, the State Lecturer, had been invited to attend, but owing to sickness in his family, was unable to do so. He delegated, however, Bro. Anderson, of the Laurens Grange, who gave us an interesting lecture on the occasion.

The main question for the discussion of which the delegates had assembled, was the condition and prospect of the crops, &c., which was thoroughly sifted, and the following conclusions arrived at:

"Area planted in cotton, compared to 1872, in the County of Union; an increase of ten per cent. The present condition and prospect of the crop? Decidedly bad. An excess of rain, cloudy weather, cold nights, high winds, deficiency of reliable labor, and luxuriant grass, have combined to injure the stand, and retard the growth of the plant, was the unanimous opinion.

Comparative area planted in corn? There was some difference of opinion upon this question—some sections having planted as much—others reporting a decrease of 5 per cent., which, we think, may be safely set down for the county.

What the condition of the corn crop? Decidedly bad.

Comparative area in wheat? Ten per cent. less. Prospect of the crop? Very unfavorable.

Comparative area in oats? Increase of 10 per cent. Prospect of crop? Favorable.

Comparative amount of fertilizers used? An increase of from 25 to 50 per cent.

Condition of the fruit crop? Bad. It has been mostly killed by frost, and a species of blight seems to be attacking the apple tree as well as the pears.

What the supply of labor? Deficient.

What as to its reliability? Worse than in 1872, while the vices of gambling and drunkenness seem to be on the increase.

How many mules imported from Kentucky and Tennessee? Our Grange reported 50. The others were not posted on the subject.

How many home-raised mules? Very few.

How many hogs raised? Some of the Granges reported none—others, that a few small farmers managed to raise enough for home consumption. But as a general thing most persons relied on the West for their pork and bacon.

What the supply of cattle? Sufficient for home consumption.

What the supply of sheep? Deficient, owing to the multiplicity of dogs, and lovers of mutton.

What progress in the cultivation of the grasses? Very little. The two last dry and hot summers have been unfavorable, while the mania for cotton seems to absorb all minor industries.

How much sorghum planted? None.

What is the supply of mechanics? Very deficient; particularly good blacksmiths.

A very interesting discussion on the above, and other topics relevant to the Order, was indulged in freely by the members, which was really gratifying, as affording assurance of the good which always springs from intellectual collision.

It was unanimously agreed, that another Council should be held on the first Saturday in August, prepared to report on the condition and prospect of the crops, and all other matters connected with the good of agriculture.

The utmost harmony prevailed during the meeting, and every one seemed interested in the proceedings.

After the main business was disposed of, the Grange was closed, and opened in the *sans souci* degree, when the lunch baskets were unmasked, and the question of *de gustibus non est disputandum* discussed in a most free and easy manner.

The experience of the writer in Agricultural Societies has been somewhat extensive, and he has found the great difficulty to be, to get farmers properly *en rapport.* An annual meeting, with a speech from somebody, who, perhaps, has had no practical experience in farming, barbecue, and a raree, show of domestic animals, is no t the thing. The farmers return home, feeling that they have had a pleasant time of it, but have learned no practical lesson.

If the Grange organization can be made the means of drawing the farmers into a brotherhood, it will achieve much.

There is no reason why an interchange of visits between the members of different Granges should not be common;—why they should not meet in the woods near some big spring, spend the day pleasantly, and indulge in a free and easy discussion of all matters pertaining to Husbandry. * * *

Union County, S. C.

Grange Notes and Queries.

We are indebted to Worthy Secretary Kelly, of the National Grange, for a beautiful photographic picture made up of portraits of the officers of the National Grange. The work is excellently well done and the likenesses, so far as we know the originals, are good. Bros. D. Wyatt Aiken and Thos. Taylor, of South Carolina, are depicted with notable fidelity. We are not informed who sells these pictures (if for sale at all) but presume Bro. Kelly can furnish copies.

———Bro. Kelly requests us to say that Subordinate Granges are no longer required to send duplicate Quarterly Reports to the Secretary of the National Grange. They report only to the State Grange.

———We are sorry not to be able to inform C. R. exactly how many Subordinate Granges there are now in this State, but we think there are about 120. We hope to have a complete list ready for our next number.

———In the notice of Providence Grange, in May number, it should read D. R. Norris, W. M., (not Morris as printed) and the Secretary's P. O. is Vance's Ferry, (not Dantzler's Ferry.)

Miscellaneous Correspondence and Notices.

Big Stories from Florida.

Editor of the Rural Carolinian: In the June number of the Rural Carolinian just read, I notice a paragraph stating that "Dummitt's Grove, in South Florida, produced last season 600,000 oranges, and he expects to have 1,000,000 this year."

Allow me in justice to the citizens of South Florida to correct it. I am well aware it was no fault of the Editor of the Rural Carolinian that such an erroneous statement was made, as it was originally copied from the correspondence of the New York *Sun*, and I have seen it floating through the country press for the past two months. Happening to be on Indian River when the *Sun* containing that article was received, I was somewhat amused, as well as a good deal pleased, to hear the comments of the settlers there on the exaggerated statements contained not only in that letter, but in several previous ones, by the same correspondent. "What an absurd story," exclaimed one. "Yes, and such tales as that do us no good," said another, "for intelligent persons seeing such statements, and learning them to be false, will believe nothing regarding this region." Now allow me to give the correct figures regarding the products of Dummitt's Grove the past season. The proceeds of its fruit amounted to about $2,500, and as the oranges sold in the Grove for one-and-a-half cents, with some few at two cents a piece, it would give the total number sold at about 175,000. Add to this the oranges consumed and carried away by visitors at 25,000, which the best informed citizens there thought would be a fair estimate, and we have a total crop of 200,000 oranges, or one-third of what the sensational correspondent of the *Sun* would have us believe. As Captain Dummitt was taken sick before the crop was fully gathered, and died soon after, the exact number sold is not known, and even were he living, it is doubtful if he could tell.

So many persons are now seeking information, and turning their attention to

orange culture, that we need facts concerning the yield and probable profit of this delicious fruit. Let us, therefore, have the truth regarding the orange and banana producing region of Florida, and it will be better in every particular for that most delightful section. Enough oranges can be grown with skilful management to make it a very profitable crop, without resorting to such fancy figures.

Selma, Ala., June 4th, 1873. H. S. WILLIAMS.

Reclaiming Marsh Lands.

EDITOR OF THE RURAL CAROLINIAN: There are, along the margins of tide water and salt lagoons in this part of the county, salt marshes overgrown with bulrushes and salt weed, (?) often fringed on the water's edge with mangrove bushes. Such lands are dark, rich appearing, sandy, with much shell and vegetable matter—some parts, beds of clay or marl and mucky deposits. These lands in times of severe gales, are overflown from one to two feet, during the storm. Some years the higher parts with the bulrushes, are not overflown—but during the high tides in autumn the water is on a level with the surface, I should say the difference between usual tides is not more than two feet. In digging at any time from 18 inches to 2½ feet. Fresh or brackish water can be obtained, according to location.

From February until August, those *bulrush* marshes are dry, except during rains, so that they burn heavily.

If practicable, I wish to reclaim some such lands. There are but few farmers here. None, that I can find, that know anything about reclaiming such lands, or have any faith that it can be done. In your section similar lands have been reclaimed. I would be very grateful for the opinion or advice of some one who knows more about the subject than I do. Will some one please reply through the RURAL CAROLINIAN? JAMES RIDEOUT.

New Smyrna, Fla.

Liquorice and Thea.

EDITOR OF THE RURAL CAROLINIAN: A good many years ago, I imported from France some liquorice plants, but I could not succeed with them, I suppose my soil being too dry and clayey. There was about that time in the *Southern Agriculturist* a statement that some gentleman in or near Columbia, had succeeded remarkably well with them. I never could in this soil grow either the camelia tea plant, fragrant olive, sweet shrub, (*calycanthus*) or *laurustinus*, and probably that was the reason why the liquorice would not succeed with me. By the by, I read lately that the tea grown in this State did not have the *indispensable theine* for which alone it is valuable. During the war I paid a visit to the late General James H. Hammond, when he gave me some of the leaves of the plants sent him from the Patent Office, but I could not recognize *any taste* of *thea* in the decoction made from them. R. C.

Acreage and the Condition of Crops.

EDITOR OF THE RURAL CAROLINIAN: 1. *Cotton* covers the same acreage as last year. Owing to a drought in April, the crop is three weeks later than last year. Stand, bad. I heard one of our best planters say a few days ago, that his crop would not average more than three-fourths of a stand. We had too much rain the last of May, consequently a great many plantations have too much grass. The present prospect is no better than last year.

2. *Corn*, about the same acreage as last year, and manured better and generally looking well.

3. *Wheat* not as much planted as last year, but no rust; the crop is now being harvested, and is generally good.

4. *Oats.* Fall oats nearly all killed by the hard winter. Spring oats good, and I am proud to say, the acreage is 40 per cent, over last year. Our planters sowed mostly the red rust proof oats. J. M. H.

Williston, S. C.

EDITOR OF THE RURAL CAROLINIAN: 1. *Cotton.*—Stands are worse than last year, by 10 to 15 per cent. The condition of the crops very unsatisfatory, and the cry of "grass" has been unprecedented. Many planters are still wrapt in its verdant folds. Increase of acreage about 10 per cent., with a similar increase of fertilizers. With our present prospect, it is hardly possible for this section to make as much cotton as last year.

2. *Corn.*—About the same area planted as last year, with more fertilizers used.

3. *Small Grain.*—Less sown than usual—badly winter killed; but red-oats and Spring oats are looking well.

4. *The weather* has been very unfavorable for several weeks. Very frequent and heavy rains, with sudden changes of temperature.

5. *Labor.*—Less efficient than last year. B.

Bishopville, S. C.

Inquiries and Answers.

S. J. H., Tuscumbia, Alabama, sends us a bunch of rye and cheat, apparently (to superficial observation) growing from the same roots, but which a careful manipulation readily separates and shows the plants to be entirely distinct. In an accompanying note, he says: "Sometime last fall you commented on some obvervations of Colonel D. Wyatt Aiken's in reply to a letter I had written him on the subject matter of wheat turning to cheat from being closely grazed. Now don't understand that I then took, or do now take either side; but does not the enclosed sample of rye and cheat look singular, and the more so when I say that this is volunteer rye. Last year I am sure there was not a sprig of cheat in the patch of rye. Then came up thick volunteer growth. I grazed it through the winter, and then kept the stock off of it till it was well in the boot, and put them on again grazing it severely. There is now a heavy growth of rye headed out accompanied by an equally or nearly so, growth of cheat all through it." He wishes us to explain. We may not be able to do this satisfactorily. Be that as it may, the fact remains that rye (*Secale sereale,*) and chess or cheat, (*Bromus secalinus,*) are not only specifically unlike, but belong to different *genera* of plants and the transmutation of the one to the other would be nothing less than a miracle. For the acorn of a live oak to produce a long-leaved pine would be no more so. The most probable explanation of cases like the one under consideration, is that the seeds of the chess were either mixed with the rye, or were previously in the soil, but that when the ground was fully occupied by the original rye crop, the conditions were not favorable to their germination. When, however, the rye only had partial possession of the soil, as in the case of the volunteer crop, the chess was able to assert its rights to joint occupancy. Any change in the conditions of a piece of ground often give rise, in what seems a mysterious way, to an entirely different vegetable growth.

———J. M. H., Williston, S. C., wishes some one to tell him what it is that kills the tomato plants. "About the time my vines begin to show the young tomatoes," he says, "they commence to wither and droop. First, a single branch, then two or three branches, and at last the whole plant droops and dies. No insects are visible; I have lost half of my plants in ten days. I notice that the body of the plant has little lumps of a yellowish cast about the size of a pin head. When they appear the plant droops and dies."

———J. L. B., Ridgeway, S. C. Your "strange grass" proves to be what is known in some parts of the country as Wild Oat Grass, (*Danthonia spicata,*) which must not be confounded with Tall Meadow Oat Grass, (*Arrhenatheum aveneceum.*) The Wild Oat Grass is a native, and ranges throughout the United States.

———J. G. D., Lancaster. It is impossible for us to tell what the plant is from the pods alone. We will plant the seeds, and hope to ascertain what the plant is in that way.

———W. P. S., Bennettsville, Ala. We regret to say that we have no seeds of any kind to distribute at present.

General Notices and Acknowledgments.

The coming session of the American Pomological Society at Boston, September 10th, 11th and 12th, (not 8th, 9th and 10th, as erroniously stated in our last number,) will be especially interesting, commemorating, as it will, the termination of the first quarter of a century of the existence of the Society, and it is believed, will be one of the most important and useful that the Society has ever held. On this occasion there will be brought together the best cultivators and fruits of our widely extended country, when may be examined and compared, the fruits, not only of the cooler climes of the North, but of the South, the West, and the Pacific slope. It is therefore very desirable that every State, Territory, and Province of America should be fully and ably represented in this Convention, thereby promoting the advancement of one of the great resources of our national wealth, the extension and perpetuation of the amicable and social relations which have heretofore existed among the members of the Society, and the diffusion throughout the land, of our deliberations, for the benefit of our constantly expanding territory. All Horticultural, Pomological, Agricultural, and other kindred Associations in the United States and British Provinces, are invited to send delegations, as large as they may deem expedient, and all persons interested in the cultivation of fruits, are invited to be present and take seats in the Convention. We hope South Carolina will not fail to be represented.

Hon. A. J. Ransier, M. C., has laid us under obligation by forwarding us valuable public documents, including the "Annual Report of the Chief of Bureau of Statistics on the Commerce and Navigation of the United States, for the year ending June 30th, 1872;" and "Vital Statistics of the United States," being Volume II, of the Ninth Census, a work of great interest and value. Mr. Ransier will please accept our thanks.

Literature, Science and Home Interests.

GUILD'S SIGNAL.

Two low whistles, quaint and clear,
That was the signal the engineer—
That was the signal that Guild, 'tis said—
Gave to his wife at Providence.
As through the sleeping town, and thence,
Out in the night,
On to the light,
Down past the farms, lying white, he sped!

As a husband's greeting, scant no doubt,
Yet to the woman looking out,
Watching and waiting, no serenade,
Love song or midnight roundelay
Said what that whistle seemed to say:
"To my trust true
So love to you!
Working or waiting, Good night!" it said.

Brisk young bagmen, tourists fine,
Old commuters along the line,
Brakemen and porters glanced ahead,
Smiled as the signal, sharp, intense,
Pierced through the shadows of Providence;
"Nothing amiss
Nothing!—it is
Only Guild calling his wife," they said.

Summer and winter, the old refrain
Rang o'er the billows of ripening grain,
Pierced through the budding boughs o'erhead,
Flew down the track when the red leaves burned
Like living coals from the engine spurned;
Sang as it flew:
"To our trust true,
First of all, Duty—Good night," it said.

And then, one night, it was heard no more,
From Stonington over Rhode Island shore,
And the folk in Providence smiled and said,
As they turned on their beds, "The engineer
Has once forgotten his midnight cheer."
One only knew
To his trust true
Guild lay under his engine, dead.

BRET HARTE.

GEORGE AUGUSTUS AND I.

Oh! Mr. Editor! did you ever dream you were a woman, and did you ever so dreaming go to the storeroom, and find nothing for dinner except half-pint of corn-meal and a piece of bacon skin? For if you have, you may fancy my feelings. And George Augustus will be coming home, and calling for his dinner. I don't mind though letting him starve a little, since I found out about the oysters.

You must know, that some little time ago, I was really getting dreadfully worried about George Augustus. He would come home, every day, to his dinner, but not a mouthful would I persuade him to eat. Things went on so for about three weeks, and at last, I seriously thought of calling in a doctor. I thought my dearest one must be in a decline. His mother when she delivered him over to my keeping, had charged me solemnly to take care of her "beloved child." (How I detest that woman; you would have thought I was going to make way with her "beloved child.") I have been finding out so many things about that "beloved child," since I have married him, that I am getting rather overcome! Well, one day, George Augustus came home as usual, but I immediately noticed his face. His complexion looked green and blue and yellow. "Oh! my dear George Augustus!" said I springing to him "it is as I dreaded, you have had a hemorrhage!"

George Augustus put his head in his hands and groaned.

Oh! my husband, am I to lose you so early, is there nothing to save you?

George Augustus groaned again, and said he thought if I got him a little whiskey, that would do a good deal for him; I was rather surprised at this; however, I went and got the whiskey. He took it off at a draught, and then professed to feel much better. This suprised me still more as I had not supposed that one could recover so easily from the effects of hemorrhage. However, I took it "on faith." (That is not a proceeding that pays though, for I took George Augustus himself "on faith," and certainly I was "stuck." He is not "all my fancy painted him," by any means.) I commenced discussing a removal to Florida, as one means by which his valuable life might be prolonged, and then it leaked out that he didn't think it was consumption; he rather thought it was those

confounded oysters that made him feel so dreadfully.

"Oysters, George Augustus!"

"Yes; Pollock has some famous ones, and I thought I'd just take a plate."

"George Augustus' failing appetite was immediately explained to me. No wonder he had no appetite for corn-bread and bacon every day, when he had just had a plate of oysters. Oh, Mr. Editor! I fear there are a great many George Augustuses among you men. Now, don't you think it rather cruel, for you to step in and take your plate of oysters every day, and we poor creatures burning up our faces and hands, and worrying ourselves to distraction, to make something nice out of nothing, for my lord to eat when he comes home; and of course my lord has no appetite when he does come home, for anything we have to give him.

Well, I just thought I'd give George Augustus a surfeit of oysters after that; so I had them every day, until he offered me five dollars if I would'nt have any more; and then, not wishing to punish him too severely, I desisted. He had something of a bill, too, to pay the oysterman, but I think he is thoroughly cured of eating oysters by himself,—like "little Jack Horner, in the corner."

Now, you must n't think George Augustus is a brute, or anything of the kind. He is a very good sort of fellow, but, of course, he has his little failings, and as he told me, before we were married, (he's never told me so since,) that I was his "guardian angel," therefore his "guardian angel" intends to keep him straight if she can.

If there is one thing that provokes me about George Augustus, it is a disagreeable habit he has of reading out to me what marvellous dinners Soyer and all those famous French cooks could produce out of an old boot and a piece of onion. I have half a mind to serve up a dish of boots to George Augustus some day or other. It would be a good way of getting rid of them. A family of ten could subsist for a month, very decently, on George Augustus' old boots and shoes. I never saw such an array in all my life. And they are all worn out at the toes. He wont burn them up either. I should be very much ashamed for a stranger to come up to our house early in the morning, and I've no doubt the stranger would be very much astonished to see the crop of boots and shoes that had sprung up during the night, like so many Jonah's gourds. You see, George Augustus uses them as weapons of offense against all the unhappy dogs or cats who dare to disturb his slumbers. You will hear a bark, then the fall of a heavy body, and a yelp, then all is quiet, until the next dog comes, then a boot is hurled out again, and so on at intervals during the night. Next morning the ground is strewn with the missiles, and then my part begins. I have to go and pick 'em up, ready for the next combat. All the animals are getting a wholesome fear of the front of the house now, and George Augustus will soon reign "monarch of all he surveys."

Dear! how married life does take the romance out of one. I can scarcely persuade myself that this is the same George Augustus who used to sing love-songs to me in the moonlight, on the guitar in the front piazza. I should not like George Augustus to hear me say so, but to tell the truth, the cessation of the guitar songs is rather a relief. I don't know how it was, but all of his songs sounded the same. No matter what they were, Trovatore, Maritana, "Sleeping I dream love," "Nora O'Neil," or anything else; they were always on the same key, and there was a vein of sameness running through them all, so they were rather monotonous. I don't believe George Augustus liked it much himself, for the day we were married, he gave the guitar a kick and said, "confound it, he'd done with that any how." But I suppose he thought he looked interesting at it, and indeed he did, though he is rather short, and I fear inclined to be stout. The only instrument he performs on now is the pipe, and he certainly succeeds much better at that than at his guitar. But he deceived mama dreadfully about his smoking. She detests the smell of tobacco smoke, and George Augustus is rather afraid of her. The evening he went to request her consent to our union, after he left, I went in the drawing-room and found mama in raptures over him. Oh! he was a most exemplary young man, and one thing had delighted her especially. She had questioned him closely about smoking, and told him her own

abhorence of it, and he had said he agreed with her it was a filthy habit. As for him he never touched a cigar! I opened my eyes at this, having often perceived unmistakable signs of the weed about George Augustus, half disguised with peppermint drops, and sometimes a "dhrop" of something stronger. But not liking to shake her faith in her new son, I said nothing to mama. I took him to task for it afterwards though, and he said he defied me to find a single untruth in what he had said. That smoking certainly *was* a filthy habit, and most certainly he never *did* touch a cigar, he only smokes a pipe. You know nobody but the Governor and his Legislature, and some other snobs smoke cigars now in South Carolina. I was forced to give in to his argument. My husband is worthy to be a lawyer. And that's another thing.

George Augustus has humbugged me in. Every day, as regular as clock-work, he goes down to his office, and there he stays until dinner time. After dinner back again, and so on. Now, I shouldn't make any objection if I could see any result from all this office work, but for the life of me I don't see what George Augustus does at his office, I never hear of his having any cases, never see his name brought up as "having made a most able and eloquent speech, etc. I fear George Augustus is something of a humbug. But as to that, we are all of us humbugs, to a certain degree. No, I will never allow any one else to depreciate my husband. I may do it, but no one else shall.

The most ardent desire of my life at present is to become a Mason, in order to see what George Augustus and the other humbugs are doing down at their old "Lodge" or whatever they call it. Every night, "George Augustus dear, let us go over to mama's and spend a nice cosy evening with her." "I should be delighted, darling, but I have to go to the Lodge, there's most important business to be transacted, and every member ought to be present." Then he takes his lantern and great coat, and a most villainous looking hat, and off he goes. George Augustus has a most dreadful looking hat; when he puts on that hat and takes his lantern, I think he would do well in a picture as "Bill Sykes" going out on his burglary business. Whatever their other business, they certainly must make it their business to see who can drink the most wine, for he always returns smelling strongly of it, and in a most affectionate mood.

But the last novelty is something they have got up called the "Grange." It has something to do with agriculture, but really I see no reason why George Augustus should belong to it, as he knows nothing in the world about agriculture, but belong to it he does. They have dinners for one thing I know, and George Augustus has been chosen chaplain. I hope he says grace a little louder for them than he does for me. We have been married two years now and really if you were to ask me to-day what he *does* say, I could not tell you. He always says it so soft, as if he were ashamed of it.

Another feature of the Grange is its singing. That I may say is truly diabolical. I happened to pass by the building where they hold their meetings and heard them singing their "song," as they call it. The effect was alarming. I may add that George Augustus "raises" the tune.

Well I wont give you any more about George Augustus and myself at present, as you may be fatigued. I will only add that he has just come in and made me a present of five dollars, and I can truly say,

"George Augustus, with all thy faults, I love thee still."

CORNELIA BLIMBER.

A SUMMER IDYL.

I sit beneath the summer sky,
And gaze upon its azure hue,
Where freighted clouds at anchor lie,
Like vessels on a sea of blue.

What do they bear—those argosies?
Rich treasure from a foreign shore?
Soft glim'ring pearls, or bright rubies?
Or amethysts, or golden ore?

What is their purpose—whither bound?
To some Bahrein—Golconda's mine?
Or do they seek enchanted ground,
Where stars of love forever shine?

Are they from a sweet em'rald isle,
Upon that calm cerulean sea,
Where vernal flowers ever smile,
And all is gladsome, fair and free?

What is their fate—to danger face—
On Scylla's rock to headlong dash,
Or feel Charybdis' stern embrace,
While livid lightnings 'round them flash?

And far below the crested waves,
Shall those strange seamen find a home?
Where coral reefs and pearly caves
Lie hid 'neath ocean's sparkling foam?

'Twere vain to guess—to ponder vain,
Let them pursue their silent way,
In solemn grandeur o'er the main,
Till comes the great momentous day.

The South wind whispers in my ear,
And gently fans my faded cheek;
I turn and list his voice to hear,
Which in soft murmurs seems to speak.

He tells a tale as on he roves,
Of orange and magnolia bowers,
Of lemon and banana groves,
Far distant in the Land of Flowers.

Of vesper bells at eventide,
And matin bells at dewy morn,
Of white-stoled nuns who swiftly glide,
To count their beads at early dawn.

And mingling with his fragrant breath,
Come gentle zephyrs from afar,
Their voice a melting music hath,
Like some sweet silver-stringed guitar.

They tell of lands beyond my view,
Of mighty waters rushing on,
Somewhere beneath the concave blue,
And blazing chariot of the sun.

I turn me to the flaming West,
Whose crimson banner is unfurled,
And ponder with a strange unrest,
Upon that vast, mysterious world.

But while I gaze, the globe of fire
Fades swiftly from my longing sight,
And Zeph'rus strikes his tuneful lyre,
To greet the full-orbed queen of night.

The East her silver gate unbars,
The moon appears with placid mien,
While one by one the twinkling stars,
Are seen to follow in her train.

The aspen trembles 'neath their beams,
The flowers bow them down and weep,
The world, with all its sorrow, seems
To hush itself and go to sleep.

The bird that sang at rosy dawn,
Droops his bright head beneath his wing,
The dew-drops glitt'ring on the lawn,
No longer now a lustre fling.

The streamlet gliding through the vale,
The bending lily on its banks,
The blushing rose within the dale,
All give to the Creator thanks.
And now while Nature's in repose,
I will my little idyl close.

ZAIDEE.

PIRNETTI THE CONJURER.

About the beginning of the present century, a conjurer made his appearance at St. Petersburg, who astonished the natives by his marvellous performances. His name was Pirnetti, and his fame is yet in the memory of those who witnessed his unrivalled talents.

The Czar Alexander, having heard Pirnetti much spoken of was desirous of seeing him; and one day it was announced to the conjurer that he would have the honor of giving a representation of his magical powers at court, the hour fixed for him to make his appearance being seven o'clock. A brilliant and numerous assembly of ladies and courtiers, presided over by the czar, had met, but the conjurer was absent. Surprised and displeased, the czar pulled out his watch, which indicated five minutes after seven. Pirnetti had not only failed in being in waiting, but he had caused the court to wait, and Alexander was not more patient than Louis XIV. A quarter of an hour passed, half an hour, and no Pirnetti! Messengers who had been sent in search of him returned unsuccessful. The anger of the czar, with difficulty restrained, displayed itself in threatened exclamations. At length, after the lapse of an hour, the door of the saloon opened, and the gentleman of the chamber announced Pirnetti, who presented himself with a calm front, and the serenity of one who had done nothing to reproach himself with. The czar, however, was greatly displeased; but Pirnetti assumed an air of antonishment, and replied with coolness:

"Did not your majesty command my presence at seven o'clock precisely?"

"Just so!" exclaimed the czar, at the height of exasperation.

"Well, then," said Pirnetti, "let your majesty deign to look at your watch, and you will perceive that I am exact, and that it is just seven o'clock."

The czar pulling out his watch violently, in order to confound what he considered a piece of downright insolence, was completely amazed. The watch marked seven o'clock! In turn all the courtiers drew out their watches, which were found, as usual, exactly regulated by that of the sovereign. Seven o'clock! indicated with a common accord by all the watches and clocks in the palace. The art of the magician was at once manifest in this strange retrogression in the march of time. To anger succeeded astonishment and

admiration. Perceiving that the czar smiled, Pirnetti thus addressed him:

"Your majesty will pardon me. It was by the performance of this trick that I was desirous of making my first appearance before you. But I know how precious truth is at court; it is at least necessary that your watch should tell it to you, sire. If you consult it now, you will find that it marks the real time."

The czar again drew forth his watch—it pointed to a few minutes past eight; the same reflection had taken place in all the watches of all those present, and the clocks of the palace. This exploit was followed by others equally amusing and surprising. At the close of the performance, the czar, after having complimented Pirnetti, brought back to his remembrance that, in the course of the evening's amusements, he had declared that such was the power of his art that he could penetrate everywhere.

"Yes, sire, everywhere," replied the conjurer, with modest assurance.

"What!" exclaimed the czar, "could you penetrate even into this palace were I to order all the doors to be closed and guarded?"

"Into this palace, sire, or even into the apartment of your majesty, quite as easily as I should enter into my own house," said Pirnetti.

"Well, then," said the czar, "at mid-day to-morrow I shall have ready in my closet the price of this evening's amusement—one thousand rubles. Come and get them. But I forewarn you that the doors shall be closed and carefully guarded."

"To-morrow at mid-day I shall have the honor of presenting myself before your majesty," replied Pirnetti, who bowed and withdrew.

The gentleman of the house followed the conjurer to make sure that he quitted the palace; they accompanied him to his lodgings, and a number of police surrounded the dwelling from the moment he entered it. The palace was instantly closed, with positive orders not to suffer, under any pretext whatever, any one to enter until the czar himself should command the doors to be opened. These orders were strictly enforced, confidential persons having watched their execution. The exterior openings to the palace were guarded by the soldiery. All the approaches to the palace were protected by high dignitaries, whom a simple professor of the art of legerdemain possessed no means of bribing. In short, for greater security, all the keys had been carried into the imperial cabinet. A few minutes previous to the hour fixed for Pirnetti's interview with the czar, the chamberlain on service brought to his majesty a dispatch which a messenger had handed him through an opening in the door. It was a report from the minister of police that Pirnetti had not left home. "Aha! he has found out that the undertaking is impracticable and has abandoned it," observed the czar, with a smile.

Twelve o'clock sounded. While the last stroke yet reverberated, the door which communicated from the bed-room of the czar to the cabinet opened, and Pirnetti appeared. The czar drew back a couple of paces, his brow darkened, and, after a momentary silence, he said: "Are you aware that you may become a very dangerous individual?"

"Yes, sire," he replied; "but I am only an humble conjurer, with no ambition save that of amusing your majesty."

"Here," said the czar, "are the thousand rubles for last night, and a thousand for this day's visit."

Pirnetti, in offering his thanks, was interrupted by the czar, who, with a thoughtful air, inquired of him, "Do you count on yet remaining some time in St. Petersburg?"

"Sire," he replied, "I intend setting off this week, unless your majesty orders a prolongation of my sojourn."

"No," hastily replied the czar, "it is not my intention to detain you; and, moreover," continued he, with a smile, "I should vainly endeavor to keep you against your will. You know how to leave St. Petersburg as easily as you found your way into this palace."

"I could do so, sire," said Pirnetti; "but, far from wishing to quit St. Petersburg stealthily or mysteriously, I am desirous of quitting it in the most public manner possible, by giving to the inhabitants of your capital a most striking example of my magical powers."

Pirnetti could not leave like an ordinary individual; it was necessary that he should crown his success in the Russian capital by something surpassing his previous efforts; therefore, on the evening preceding the day fixed for his departure, he announced that he should leave St. Petersburg the following day at ten o'clock in the morning, and that he should quit by all the city gates at the same moment! Public curiosity was excited to the highest degree by this announcement. St. Petersburg at that time had fifteen gates, which were encompassed by a multitude eager to witness this marvellous departure. The spectators at these various gates all declared that, at ten o'clock precisely, Pirnetti, whom they all perfectly recognized, passed through. "He walked at a slow pace, with head erect, in order to be the better seen," they said, "and he bade us adieu in a clear and audible voice." These unanimous testimonies were confirmed by the written declaration of the officers placed at every gate to inspect the passports of travelers. The inscription of Pirnetti's passports was inscribed in the fifteen registers.

A recent work on gardening is called "The Six of Spades." "The Rake's Progress" would be be an appropriate title for a sequel.

WHAT OUR GIRLS SHOULD LEARN.

Mothers are in a great degree responsible for the wives their daughters make. If they do not train them early to take their share in household work—if they do not teach them to cook and superintend a household, to sew, mend and knit—theirs is the blame if they do not fulfil the duties they undertake when they become wives and house-keepers. In every situation in life, high or low, this sort of knowledge is of the greatest advantage. If the husband is rich, the wife should know how to disburse his riches most advantageously; if he is poor, she should know how to make a little go a great way, and should have been taught that "many a little makes a mickle."

There is no necessity that the gaining of such information should interfere with either intellectual acquirements or elegant accomplishments. A well-regulated mind can find plenty of time to attend to all these pursuits. When a girl is nine or ten years old, she should be obliged to take some regular share of the household duties upon her shoulders, and to feel responsible for the manner in which her part is performed, such as washing the cups and saucers, cleaning the silver, or arranging and dusting the parlour, and attending to her own mending. This should not be done occasionally and neglected whenever she does not feel in the mood of performing the task, but should be considered her special work, and its non-completion should receive rebuke and correction. When older, girls should begin to take turns in making bread, cakes, pies, and puddings — should learn *effectually*, and not stand by and see others do them, but learn to do the work practically. Many a husbands's affairs have suffered sadly for want of these domestic accomplishments. The wife tries to learn, tries to do her duty, but her early education was sadly neglected, and she must always be the sufferer thereby. On the other hand, if a girl has been well taught in her youth, when she becomes a wife she understands fully the management of household concerns, and many a husband has been saved from ruin by his wife's knowledge of economy and good management.—DAISY EYEBRIGHT, in the *Albany Cultivator.*

THE BLUE AND THE GRAY.

We heartily approve, the *South Brooklyn Advocate* says, of the exalted sentiments pronounced by Captain Tanner, in his address at Greenwood on Decoration day, wherein he abjured his hearers to honor alike the martyrs on both sides, who fell in our great internicine struggle. Not to the brother who fought with us alone, shall adulation be given, but as well to them who battled for what they conceived to be the right, who laid down their life a sacrifice to what they thought was the defence of the honor and dignity of their section of the land. Who showed that their valor and their patriotism had no uncertain or shifting basis, who proved that Americans are no cowards or laggards, in defending the principles which they espouse. We glory not in the object they sought to accomplish, but we know they fought well and bravely; we know they made no mean sacrifice—we feel that they as well as our own Federal army showed endurance, courage, and determination which merits praise, and reflects honor upon the name of Americans. The discrimination which segregates the American soldier when honoring their valor by choosing him only as the subject of it who sustained the successful side, has its origin in vindictiveness and sectional dislike, and is advocated only by the bitter and resentful, to whom charity is but a byword, and whose admiration of character is restrained by selfishness, or the narrow appreciation which is bounded by ignorance or unsustained hatred. To one who like Captain Tanner has thus instructed the people in their duty to their fellow men and to the dead heroes of a lost cause, great thanks are due.

This new departure of one who stands not undistinguished for his own share in the victory consummated, is entitled to confirmation and adoption by all. It is a harbinger of a better and nobler, a humane and just sense of conferring honor where honor is due. Let the people take it to heart and act upon it, until the solidified American people shall make fragrant with floral decoration the grave of every American soldier, and the exclusiveness of territorial fealty shall cease forever.

DARK ROOMS—SUNSHINE.—Windows were originally intended to let in light and air. Modern housekeepers, however, from the mansions of the wealthy to the cabins of the very poor, vie with each other in shutting out the blessed sunshine and pure air. Windows are studiously curtained, double, dark, and very generally closed. Let the shades run up easily on rolers attached to the sash, and the sash always dropped an inch or two.

Sun-light is an element of life. It decomposes and scatters, in connection with pure air, the death seeds. When fevers are epidemic, in large cities, or in wards of hospitals, the sunless rooms and sides of streets report a much larger number of deaths than are ever found where sunshine can enter, even for one hour a day. Is it from indolence or ignorance, or sheer thoughtlessness, that the people seem to study how to shut out the sunshine? Blinds and vines, curtains and draperies, are used to bar the entrance of the life-preserving sunshine. Death lurks in darkness. Even the potato vine cannot thrive in a sunless cellar. —*Journal of Health.*

For Our Young Folks.

THE BIRD THAT MAKES A HAMMOCK.

We have told you about the "Bower Bird," with his gaily-ornamented play-house; and of the "Oven Bird," that uses clay and grass in building the walls of his nest, which harden in the sun until they become like earthenware. Now, there is another bird quite as remarkable as these. It may be called the first hammock-builder. In the picture our engraver has copied from Rev. Mr. Wood's delightful book about animals, called "Homes without Hands," you will see that this Australian bird, named the Lanceolate Honey-eater (from the shape of its feathers, which are long and tapering toward the lower end like a lance), hangs its nest from a slender branch, just as a sailor does his hammock.

Nothing could be more comfortable than this nest, built of grass, wool and pure white cotton, gracefully suspended in the air, and swinging in the breeze. It is made small and deep, so that the mother, in sitting on her eggs or brooding over her young, is obliged to pack herself in very carefully, with her head coming out on one side and her tail on the other.

The honey-eater of Australia is brown and white, with a black line down the middle of each feather. It feeds on insects and the sweet juice, or honey, of flowers. Unlike the oven bird, which is a lively, restless little fellow, this honey-eater is grave and quiet, and will sit for hours on a tree without stirring. Its presence would hardly be noticed, except for a shrill note which it sends, now and then, through the forest.

THE BOY THAT STUCK TO FARMING.

When I was a boy, says a distinguished man, my first saving of ten cent pieces, earned by Saturday afternoon work—for school kept half a day on Saturday then—were expended in buying a heifer-calf. Then I worked on, and paid my father a certain sum each month for keeping. When the calf was one year old, I traded it for two steer-calves, and now had to put in good and strong to pay for their keeping; but I occupied all my spare time in teaching these calves to work in the yoke, and at one year old they would gee and haw as well as old oxen, and my father paid me for their use in leading the team for breaking his two and three-year-olds. Again, I had a piece of ground each year, after I was fourteen, that I could plant and work on shares; and, if I wanted help, why I had to give two days of my time to the hired man's one day. I grew just what my fancy and reading dictated, and from the proceeds I dressed as well as any of the boys at the present time. I always had some time to play, time to read, and now look back, with love and pleasant thoughts, to the old farm, and the farm hand who taught me to use tools, and whipped me when I neglected to drive the team out straight at the end of the furrow in ploughing. The remembrance of my boyhood has always induced me to favor all items of encouragement at home on the farm; and I believe, if it were more generally practiced, we should have more good farmers, and less broken-down merchants, or loafing, hanging on, time-serving clerks, ready for anything except honorable labor and usefulness.

THE TAILOR BIRD.

That a bird should turn its beak into a sewing needle might seem a feat above all other feathered genius, but the tailor-bird of India has actually done so. The following is the mode in which this winged mechanic constructs its nest. The bird, having two leaves of a size suited to its wants, and picked up a bit of cotton thread, drills a hole in the leaves with its beak, and then, with the same tool, passes a bit of thread through; a knot being then formed, so as to prevent the thread from coming out, one pair of holes is thus secured. The same operation is repeated with each set of holes until a sufficient number of leaves are joined to form a nest. This fastening a knot at each pair of holes, instead of uniting all by one thread, as a seamstress would do with her needle, is a tedious task; but the bird has no needle, and, therefore, has to work with natural tools. Surely this operation is evidence of some power of reasoning.

Domestic Economy.

GOOD FOOD AND GOOD HEALTH.

Upon this topic Professor Blot thus expresses himself: "The man who does not use his brain to select and prepare his food is not above the brutes that take it in the raw state. It is to the physique what education is to the mind, coarse or refined. Good and well prepared food beautifies the physique the same as a good and well directed education beautifies the mind. People's taste is in food as in dress, differing not only in colors, but also in shape, therefore by our variety of dishes and our different styles of decorating them, by the ease that they can be prepared in the cheapest as well as in the most costly way, we think we meet all wants and tastes. In fact, to use a very trite remark, 'you cannot make a gentleman by feeding him on codfish.'" There is no country where there is so much dyspepsia as in America, because our people pay but little attention to food and eat too much meat for the exercise they take. If one has mental labor, fish every second day, at least is requisite. Soup sets all the glands at work, and prepares the stomach for the most important function of digestion, and therefore should be taken at dinner every day. Beef broth is to old age what milk is to the young. Cookery properly attended to keeps man in health, if the stomach is out of order the brain is affected. We have the soft and hard parts in our anatomy, and the bile, and therefore—it is requisite to vary our food. We should eat more fruits, vegetables, soup and fish. Fish and cheese are the best articles of diet to give the children. We of the United States have the most money of any people, and the greatest abundance of raw material, yet we live more poorly, comparatively, than any civilized nation. For instance there is a millionaire in Brooklyn who has pork and beans every second day for dinner. Wrinkles are produced by the want of a variety of food.

CANNING FRUITS AND VEGETABLES.

A correspondent of the *Rural New Yorker*, gives the following concise, well considered, and trustworthy instructions in canning fruits and vegetables:

The fruit having been picked, is next thoroughly cleansed. All the silk is removed from the corn, the peas are shelled, peaches pared, beans strung, etc. The corn is cut from the cob, taking care not to cut too deep. Thus prepared, the fruit or vegetables are spread in thin layers on large tin coolers, which are placed in tanks containing ice water, until such time as the contents may be wanted for canning. Green corn is generally considered the most difficult article to preserve nicely. It is treated as follows: The cans having been previously well cleaned, are filled with the corn prepared as above, and are then sealed up by soldering on the lid; a small hole is then punched through the lid, and the can is placed in a large pan containing boiling water; this should come almost to the top of the can, which must be secured to its place to prevent upsetting, or other accidents; it is allowed to stay in this bath about half an hour, or until steam escapes freely from the hole in the lid; it is then removed for an instant, and the hole in the top is sealed with a drop of solder. The can is then replaced in the bath and kept at a boiling temperature for three and a half or four hours; at the end of this time it is removed and allowed to cool; when cool, the ends of the cans should be slightly concave, and they must preserve this concavity until opened for use. There is no surer proof that a can is spoiled than that afforded by swelled heads.

Tomatoes are treated in exactly the same way, except they do not need more than half an hour's boiling after being sealed.

Beans and peas require almost as much heating as corn. Peaches and other fruits are packed into the cans, and then syrup of the proper strength is poured over them until the cans are full, when they are treated the same as tomatoes. The whole process is extremely simple, and only requires care and perfect cleanliness.

MY REMEDY FOR RED ANTS.

I first procure a round rod of iron, say from one-half inch to five-eighths thick, then I bore a hole in the bottom of my safe legs about two and one-half inches deep, cut the rod in pieces six inches in length and put them into the legs; I then have tin pans about eight or nine inches across the top; I put a small piece of wood about an inch and a half wide and one-half thick and about three and one-half inches in length, in pans. I generally bore a hole in the piece of wood not quite half way through to set the iron pin in, which raises the legs of the safe above the pan, and leaves so large a surface between the inside of the pan and the

iron foot or rod, that when the pans are filled with water the ants will never succeed in making the trip from the edge of the pan to the little iron rod placed in the center of the pan. The holes should be bored with a bit or auger the same size of the iron rod, and the same depth in each leg, and the four pieces of the rod should be cut of the same length so as to have the safe stand level. I have no trouble in leveling my safe or tables. I also keep my milk in large safes fixed in the same way. I have all of the pannels wired in my milk safe, as I find them much better for this hot climate than the little close milk dairies.

I will also give you my plan for keeping ants out of sugar barrels and flour, meal, meat, lard, &c. Say the store-room is 18 feet long, I build a bench 14 feet long and two feet wide, by making three little tressels, for which take a piece of timber two inches thick and four inches wide, and cut the proper length, and nail on legs about nine inches long. Put them on so as to make the bench about nine and one-half inches high, and put the bench pieces edgewise, and bevel or chamfer off the legs so as to make them set about five and a half or six inches apart at the bottom, so that they can be put into little tubs made from five to ten gallon kegs sawed in two. The tubs are to be filled with water, as the pans are under the safe; and I generally put pulverized charcoal in them to keep the water from smelling bad, and keep the tubs full of water. In the wooden tubs I prefer putting in salt to charcoal. The safes and platforms should not be allowed to touch either wall or side of the room in which they stand.

Rapieds, La. SUBSCRIBER.

HOW TO KEEP OUT RATS AND MICE.

This is my plan for keeping them out of barrels of sugar, flour, meal, lard, &c. After the barrel is unheaded, take off the top hoop and put on an iron hoop, letting it fit tolerably tight, and let it project a quarter or a half inch above the top of the barrel, and then have a lid fitted on quite level and let it project over the side of the barrel about two inches, and I assure you that no mouse can get in by cutting his way, as is their custom, for the iron hoop prevents them.

Rapieds, La. SUBSCRIBER.

PIES AND CANNED FRUIT.

Canned pears, peaches and quinces usually will bear scalding in their own liquor before putting them in the pie-plate. When tender, skim out and lay on a dish to cool. Then add to the liquor enough sugar to make a syrup, more or less rich, according to the taste of those who are to eat them. When both fruit and liquor are cold, if the pears, peaches or quinces are in halves, cut them in slices quarter of an inch thick, and lay into the pie-plate; pour over as much syrup as it will hold, having first put on the under crust and laid an edge of crust around it. Fill the plate not quite an inch thick. This is more economical, and, to our taste, much better than to use the fruit in large pieces. Cut a few small bits of butter (half a tablespoonful in all) and lay over the spice; put on the upper crust and bake a rich brown, but be careful not to scorch the crust, as a little sorch spoils the best of pastry.

Plums must not be scalded before baking, as they come to pieces very easily, but prepare the liquor in which they are canned the same as for pears, peaches and quinces.

DOMESTIC REMEDIES.

A Cure for Colds and Catarrh.—Fill a wide-mouthed glass-stoppered bottle with cotton, which saturate with the following mixture:

R Acidi carbolici puriss.....scru. iv.
Liq. ammon. caustic., sp. gr. 0.960.dr.iss.
Aquæ destillat..... ....dr. ij. scru. ij.
Spirit. vini rectificatiss.....scru. iv.

The vapors are drawn into the nose frequently during the day, and now and then inhaled into the mouth. Any druggist can compound this for you.

Lime for Toothache.—A correspondent of the *English Magazine* gives the following curious remedy: Put a piece of quick lime as big as a walnut in a pint of water in a bottle. Clean the teeth with a little of it every morning, rinsing the mouth with clean water afterwards. If the teeth are good, it will preserve them and keep away toothache; if the teeth are gone, it will harden the gums so that they will masticate crusts and all.

A Remedy for Corns.—This is an English remedy: Bathe the feet well in warm water, then with a sharp instrument pare off as much of the corn as can be done without pain or causing it to bleed, and dress once a day with the following salve:—

R Black oxide of copper.....gr. xv.
Lard .....oz. ss. M.

The Earth Cure for Ulcers.—I dried and pulverized some clay, a writer in the *Country Gentleman* says, and recommended it as a valuable remedy to a neighboring woman who had a very bad ulcer on her ankle. She had paid our best physicians over fifty dollars for treatment, without any relief. She applied the dry clay, almost constantly, for about six months, and a perfect cure has resulted.

To Remove Proud Flesh.— Pulverise loaf sugar very fine and apply it to the part affected. This is a new and easy remedy, and is said to remove it entirely without pain.

RECIPES.

Sweet Pickled Cucumbers.—Pare one peck of ripe cucumbers, quarter them lengthwise and simmer them in slightly salted water until you can stick a straw through them easily. Then take the fruit out of the water and put in jars. Have ready a syrup made of a pint and a half of good vinegar, four and a half pounds of sugar, and spices to taste, and pour it hot over the cucumbers, cover up and set away in a cool place. In a couple of days pour off the syrup, heat up again and pour hot over the fruit as before. Be careful not to have too much salt in the first process. The rule is, a pound and a half of sugar to every half pint of vinegar for the syrup.

Scuppernong Wine.—A correspondent of the *Mobile Register* furnishes the following simple recipe: Gather the grapes when fully ripe and crush them in a tub or trough with a common maul, after which press the juice out as close as possible—*i. e.*, as long as it will run; put two pounds of the best white sugar to each gallon of juice; fill a cask brimming full and leave the bung open. When fermentation ceases, stop bung in barrel tight; it will take about twenty days to ferment. Bore a spigot hole in barrel with gimlet, and put spigot in it, and try it frequently by taking spigot out to see if fermentation is entirely over.

Drying Figs—A California Recipe.—Pick the figs when thoroughly ripe, dry them on racks as you would other fruit, in the sun, for four or five days—or until the water they contain is thoroughly evaporated. If there is any dew, cover them nights. Then place them in a vessel perforated with holes, like a colander, and dip them into boiling water about one minute, after which again expose to the sun until the surface water has been evaporated. Then lay them into wood, tin, earthen or other vessels, and press closely so as to exclude the air, and cover securely.

Notes and Memoranda.

SCIENTIFIC MEMORANDA.

Experiments in Manuring Seeds.

In the Rural Carolinian for February, 1873, we made mention of Prof. Lableaux's compound for manuring seeds. This fertilizer was introduced here last spring by Mr. John Commings, and was tried, to a limited extent, by some of the truck farmers on Charleston Neck. In May last, (but too late for a report in our issue for June,) we had the pleasure of making one of a party of gentlemen interested in agriculture, who made a very pleasant visit to the farm of Mr. Devereux on the Neck, at the suggestion of Mr. Commings, and partly for the purpose of investigating the effects of the Lableaux compound. Mr. Devereux had used it on his entire crop of beans, so that while he was fully convinced of its good effects, no comparative results could be shown. The testimony of a neighboring farmer, who had used the compound on a part of his crop, was that the beans on the part thus manured, presented a greener and more healthy appearance from the beginning, and were forwarded in their growth, so that gathering the crop was commenced on them several days earlier than on the part where the seed had not been thus treated. Every farmer will see the important bearing of this last fact, (if fact it be, as we have no reason to doubt,) on the cultivation of many species of agricultural plants, and especially those grown by the truck farmer, in which earliness is an essential condition of success. We hope that this new compound will have a more thorough and extensive trial next season, with careful comparison of the results with those obtained without its use, so that the question of the utility of thus manuring seeds may be definitely settled. At present we can only give the foregoing statements for whatever they may be worth.

The Preservation of Food by Cold.

A hint at what may possibly become an important method of preserving animal and vegetable substances for an indefinite length of time, without subjecting them, as at present, to the action of heat, and thereby materially

affecting their texture and taste, is furnished by Boussingault to the Academy of Sciences of Paris. In a recent communication to that body, he states that, as long ago as in 1865, he exposed beef bouillon in hermetrically sealed vessels to the action of a freezing mixture at a temperature of 4° F., keeping the same immersed in the mixture for several hours. On opening these vessels, quite lately, he found that the contents had undergone no change, and were precisely as before being submitted to the cold.

Vaccination as a Cure for Small-pox.

Mr. R. C. Furley, in a letter to the *Scotsman*, says, he is able to prove that vaccination is not only a preventive of disease, but a cure. It is, he says, ascertained, that when a person, liable to take small-pox, is exposed to the infection, the poison circulates in the blood for eight days before producing any febrile symptoms; then commence headache, sickness, pain in the back, suffused eyes, and a particularly white-furred tongue—a group of symptoms that belong to no other disease, and which lasts for three days. Mr. Furney says he can show that if you vaccinate during the febrile stage the fever is slightly increased, but the eruption does not make its appearance, and if you vaccinate during the eruptive stage the eruption is immediately arrested. The mature lymph overtakes the immature poison, and the disease terminates. The doctors should look into this matter. If these are facts, they are important ones.

Edibility of the Roots of Wild Rice.

Prof. Gray, in *The American Journal of Science*, calls attention to an article by Dr. Hance upon a Chinese culinary vegetable named *Kan-sun*, the shoots of which constitute one of the finest vegetables known, being, when boiled, much like green corn, but of a peculiar, rich delicacy. These shoots come from a plant very closely allied to, or perhaps even identical with, our American wild rice, (*Hydropyrum latifolium*—*Zyzania aquatica*,) and it is suggested that the wild rice may at any rate afford similar esculent roots. The Professor, therefore, thinks the suggestion worth attending to, and it is to be hoped that some one will try the experiment as to the edible qualities of the plant in question.

LITERARY NOTES.

"Plain Talk with Young Mothers," is a little pamphlet which no lady who has the happiness and honor to belong to the class addressed should fail to read. The hints which its fair author has so clearly, as well as chastely and elegantly set forth, are eminently practical as well as important, and if acted on will save both mother and child from much suffering. [Walker, Evans & Cogswell, No. 3 Broad street, Charleston, S. C. By mail, 25 cents.]

To Day, Dr. Dio Lewis' incomparable weekly, commences a new volume with the number for July 5th, and the pages are to be enlarged and other improvements made. We are under no especial obligations to recommend *To Day* to our readers, but for their own good we should be glad to know that thousands of them read it. [Maclean, Stoddart & Co., Philadelphia; $2 50 a year.]

Prof. Schele de Vere's "Modern Magic," published by the Messrs. Putnam, is a good compilation of facts and legends, timeworn traditions, and modern testimonies, on a subject which will probably continue to have an interest for the greater part of the world's people, to the end of time.

"Gardening by Myself," by Miss Anna Warner, is a handsome and lively little volume on the cultivation of flowers, written as if the author loved the work she writes so well about. [A. D. F. Randolph, New York; $1.25.

G. P. Putnam's Sons' reprint *Science Gossip*, an English monthly magazine of interchange for students and lovers of Nature. It is a valuable and entertaining work. [New York, $2 25 a year.]

"Some Easy Lessons in Irish," by Very Rev. Father Burke, are to be issued immediately. This will be the first book in the Irish language printed in America.

A book entitled "Good Morals and Gentle Manners," for schools and families, has just been published.

MERE MENTION.

A correspondent, writing from Monroe County, Miss., raises the "hue and cry" against J. D. Robert, who, last winter, sold county rights to use the "American Transplanter," since which time nothing has been heard of either him or the "rights." He is described as "a Yankee," who probably "never lived in Mississippi, except long enough to steal something." "Low Middling" is called upon by this correspondent to "explain," if he knows anything about said J. D. Robert, how he may be brought to justice.

——The late session of the National Agricultural Congress, at Indianapolis, seems to have been, on the whole, an interesting and profitable one. The grand question of the day was that of Transportation; and the Indianapolis *Sentinel* says: "It is pleasant to record that the spirit of the discussion was in the direction of candid investigation, and a desire for the truth."

——A lady traveling in Europe writes: "A German Professor's wife will appear at her ease in her wedding dress fifteen or twenty years old, and entertain you in your own language while you sit perfectly ignorant of the language of the country where you are visiting."

——Many crop reports, (mostly from Alabama and Mississippi,) came to hand too late for insertion. The prospects, we are sorry to say, are not considered very promising. Drought in April and too much rain since, freshets in some localities and *grass* everywhere are the general burden of our returns.

——Mr. John S. Goe, near Brownsville, Pa., reports the annual shearing of his flock of Merino sheep. The entire flock of 196 sheep of all ages, mostly ungrown ewes, averaged 13 pounds and 4 1-9 ounces. One ram yielded 25 pounds and 11 ounces.

——Mr. A. J. Alexander, Spring Station, Ky., it is said, has sold the Short-Horn heifer 15th Duchess of Airdrie, red, calved August 18, 1871, for $10,000, to an English buyer.

——The Virginia Horticultural and Pomological Society, at its last meeting, recommended the organization of a Southern Pomological Society, auxiliary to the American Pomological Society. A good suggestion.

——N. P. Boyer, whose swindling operations were long since exposed in the RURAL CAROLINIAN, is said to have left his home for an indefinite sojourn in parts unknown.

——Dr. Chandler stated in a recent lecture, that carbolic acid and sulphate of iron (green vitriol) were the best disinfectants.

——Mr. John S. Goe has lately sold to Mr. Van Etten, of Utah, 118, Merino sheep, and a pair of Angora goats.

——Louisiana expects this season to have the largest sugar crop since the memorable harvest of 1850.

——A single California orchard has yielded a thousand gallons of olive oil.

PERSONAL NOTICES.

Professor W. C. Kerr, State Geologist for North Carolina, has discovered that the supposed "silver caves" in Mitchell County are probably mica-mines, worked by contemporaries of the mound-builders.

——John Stuart Mill died at Avignon, France, where he had gone to visit the tomb of his wife, who died and was buried there ten years ago. Since that time Mr. Mill has made yearly visits to her grave, upon which occasion he always decorated it with flowers.

——Gen. Beauregard, as President of an Immigration and Homestead Company, proposes a Convention of planters to meet in New Orleans to devise plans for procuring immigrants, whereby he says peace and prosperity will be secured.

——Emma A. Dodge almost despairs of her sex, because women cannot express their wishes in concise, accurate, and business-like terms half so easily as men.

——Mr. Jefferson Davis is writing his Confederate history as rapidly as he can. He has but one sound eye, which defect forbids much reading or writing.

——Miss Julia Leverett, of Columbia, S. C., carried off the premium lately offered for the best song, with music, adapted to the use of the Patrons of Husbandry.

NEW EXCHANGES AND PAMPHLETS.

Hygiene, a fortnightly journal of Sanitary Science. G. P. Putnam's Sons, New York: $2 a year.

The *Science of Health*, devoted to health on hygienic principles. New York, S. R. Wells: $2 a year.

The *Sanitarian*, a monthly journal. New York, A. S. Barnes & Co.: $3 a year.

The *Mississippi Valley*, a monthly, devoted to agriculture, commerce, industrial progress and resources. Nashville, Tavel, Eastman & Howell: $3 a year.

Catalogue of Washington Lee University, for the year ending June, 1873. John Murphy & Co., Baltimore.

Catalogue of Newberry College, Walhalla, S. C., for 1872-'3. Charleston, Walker, Evans & Cogswell.

Catalogue of Davison College, Mecklenberg County, N. C., for the year ending June 26th, 1873.

University of Virginia, Department of Chemistry, Civil Engineering and Agriculture. Charlotteville, Va.

CHIPS AND SPLINTERS.

It is better to be envied than to be pitied.

—— Wise sayings often fall to the ground, but kind words never die.

—— "Ma," said Fred, "I should rather be a wild turkey, and live my life out on the prairies, than be a tame turkey and be killed every year."

——"If you sleep or if you do not, if you have the headache, or the sciatica, or if your digestion is impaired, by all means keep it to yourself, especially in the pleasant morning hours."

——A Western reporter died of brain fever the other day; he tried to take notes of a discourse that his mother-in-law was making for the benefit of the family, and the swiftness with which he was obliged to work overstrained his mental organization.

——A French journal states that the Victoria Bridge "stretches from the shores of Portland, Maine, to Port Sarnia, Lake Huron," which makes it a pretty long bridge, as those points are about eleven hundred miles apart in a straight line.

——A colored gentleman went to consult one of the most conscientious lawyers, and after stating his case, said, "Now, Mr. ——, I know you's a lawyer, but I wish you would please, sir, jiss tell me de truff 'bout dat matter."

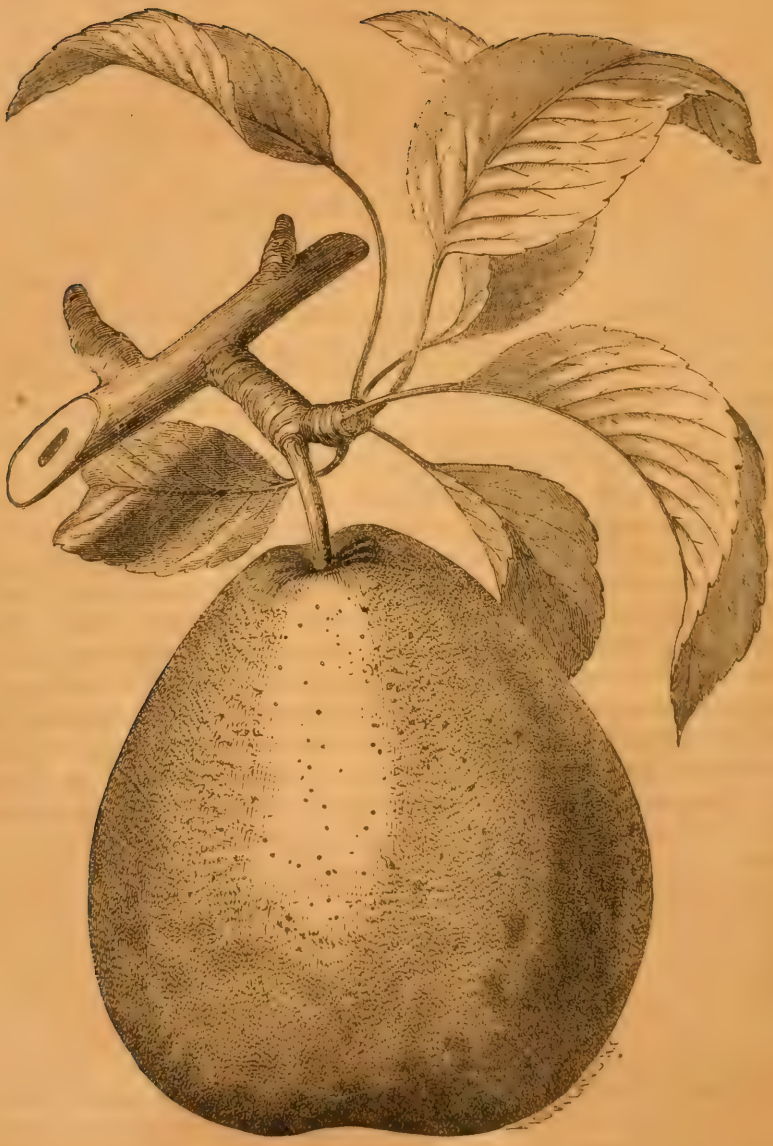
——An old lady in Worcester County recently refused the gift of a load of wood from a tree which had been struck by lightning, through fear that some of the "fluid" might remain in the wood and cause disaster to her kitchen.

——A little Danbury girl, when asked by her mother about suspicious little bites in the sides of a dozen choice apples, answered, "Perhaps, mamma, they may have been frost-bitten, it was cold last night." The mother retreated.

——"Humph!" said an Englishman to a Scotchman, as they were walking over the fields of the latter, "oats are very well in their way, but in England we give them to our horses, while here they are food for men." "And just see what fine horses there are in England"—"and what fine men we have in Scotland," returned Sandy.

——A Wisconsin school-ma'am demands $1,000 for four kisses stolen from her by a freight conductor. She missed the passenger train, and rode in the drover's saloon of a freight train, and the conductor took her hand in his, threw his muscular arm around her slender waist, and did the damage aforesaid. She sues the Railroad Company, but they decline paying the $1,000. They have discharged the conductor.

——A correspondent of the *Pacific Coast Journal* writes that paper: "Your advice to be cheerful at meal times, is thrown away as far as we are concerned; we are not only cheerful but *jolly*. The dinner hour is one of hilarity. Why should I not be happy; I have the best husband in the world, a duck of a hat, a quarter section of land, a log cabin, with all the modern improvements. My principal trouble is a disagreement with the hens as to the way they should make themselves useful; they insisting on setting, while I much prefer they should continue to lay."



The Flemish Beauty Pear.

THE

Rural Carolinian.

Progress with Prudence, Practice with Science.

D. H. JACQUES, EDITOR.

Vol. IV.] CHARLESTON, S. C., AUGUST, 1873. [No. XI.

Thoughts and Suggestions for the Month.

Most of our crops will soon be made, so far as human labor, skill and forethought may avail. For the rest, we must trust in Providence, preparing, in the mean time, to gather and save all, be it little or much, which may be given us as a reward for our toil. Let any "laying by" that remains to be done, be carefully and scrupulously attended to, especially the late corn, of which we hope a large area has been planted. Little cotton-picking will be done before next month, (except Southward of this latitude); but now is the time to get everything ready—gin-house and its machinery, baskets, sacks, etc. Wheat, rye, oats, etc., must not be neglected this season, and we trust preparations are made, or making, for planting largely. Read again the articles on "Small Grain," in various back numbers. There is sound advice in them from practical planters, who speak from experience.

———Fodder-pulling, as we have often said, does not pay under the present labor system. It is doubtful if it ever paid. Be that as it may, there are many who cannot, or think they cannot, dispense with pulled fodder. If, then, fodder must be pulled, let it be carefully taken care of, and properly cured. After it is stripped from the stalks, it is often rendered nearly worthless, in showery weather, by bad curing. If you can get one day's good sun, or even less, you may bundle in small sheaves, stack, and in a few days pull down again, as the weather permits, and thus bring it through, looking tolerably bright even in unfavorable weather. Sweet potatoes must not be forgotten. Pull up the weeds when you can no longer use the hoe. Leave no means untried to make your crop a heavy one.

———"Make hay while the sun shines," and turn everything to a good use that will serve for forage—crab-grass, pea-vines, millet, sorghum, etc.—and don't spoil your hay in the curing, as is often done.—It is the prevailing neglect in this mat-

ter, and not the lack of good material for hay, that so often makes the Southern home-grown article so poor. Our crab-grass—always abundant, as every farmer knows to his sorrow—though not the best in the world—makes better hay than the greater part of that brought here from the North and sold at heavy prices; but if cut after all the life has gone out of it, and then exposed to dew and rain for a week or two, nobody can blame our poor mules and cattle for turning up their noses at it. In connection with dry forage, do not neglect to have a plenty of turnips. The Ruta Bagas should have been planted in July in the middle and upper country, but it is not yet too late, if a stand has not been obtained, to sow on rich, well prepared land. See previous numbers for further suggestions.

———Colonel Waring, of Ogden Farm, who has been traveling in Europe, and making agricultural observations by the way, was impressed everywhere by the close economy that is practiced—economy in land, manure, food—everything, in fact, but labor, which is almost a drug. "The best of us," he says, "waste in every hundred acres, ground enough to support a family in Germany, and manure enough to support two families." We, Americans, are an industrious, enterprising and energetic people; but we—and especially is this true of the people of the South—are not an economical people. We can earn, but we have not learned to save. In this we should allow the farmers of Europe to teach us a lesson.

———It is well now to keep in mind the autumn fairs, and consider what you can exhibit with advantage to yourself, and with benefit to the agricultural interests. Whether fairs are a benefit to the farmer or not, is considered by many an open question. We fear that in many cases they are not profitable; but we fully believe that they can be made, and often are made, of great value, as promoters of agricultural progress and social good fellowship. Let us try to improve and regulate, instead of abolishing them—correcting the abuses which have, in some cases, crept into their management, and placing them on a higher and firmer basis.

———Fairs have become more sadly degraded at the North than here; and a correspondent of the *Rural New Yorker* suggests that their name be changed to "Agricultural Sprees," and that all attempts on the part of farmers and gardeners to exhibit their products thereat, be discontinued, since fairs are little more than days of recreation and amusement—and no amusement whatever to exhibitors, who, at large expense, and at the cost of much discomfort, take their products to these fairs for exhibition."

———Agricultural Colleges are coming in for their share of criticism, and doubts are expressed in regard to their utility as aids to agriculture. A Boston paper says, that a Farmer's Club of a country town undertook to support a young man at the Agricultural College, in the faith and expectation that he would come back and settle among them, so that they might profit by his example in the wise improvement of their acres. But no sooner had he obtained his diploma than he was in this city seeking an opportunity to turn his accomplishments to account in some office or shop.

The Exclusive Cotton Crop Question.*

On this occasion, and at this season, and with our present surroundings, it were more fit and tempting to draw inspiration from

> "Floral apostles, that in dewy splendor
> Weep without sin, and blush without a crime;"

and, at most not to depart farther from them than the regions of the moral æsthetic, and teach that

> "The only amaranthine flower on earth is Virtue,
> The only lasting treasure—Truth."

But the subject assigned, "Is an exclusive cotton crop good policy for any single farmer, or planter, in South Carolina?" is eminently practical. I am embarrassed, as was a distinguished friend, (a candidate for public honors and favors,) in discussing a vexed question, upon which the public mind was not settled, because "so much could be said on both sides;" and, also, because my views conflict, I think, with the expectations of those delegating this duty to me.

In the form in which the proposition is stated, my judgment and observation confirm the affirmative.

My experience and observation, too, are not very limited; for within five years, as a citizen, doing what I could for our old State, and as an attorney for others, I have aided in the settlement of fifty farms in my immediate vicinage, and have watched their progress and development with close attention and great interest. When I assure you that in that period I have known several instances where a farmer has purchased his farm, at pretty fair prices too, and paid for it out of the *net* profits of a *single exclusive cotton crop*, and that the result could have been attained by no other product known to our soil, (in the then condition of the land,) that I have often known realized *net* profits of fifty dollars per acre from cotton, and that no other staple could *approach* such results, I think the question is answered. There can be no escape from the conclusion but to dispute the premises. The affirmative premises that the cotton crop paid for the farms in one year, and that net profits of fifty dollars per acre have been made frequently with cotton cannot be disputed. *I vouch for the facts.* In every instance alluded to in the payment of the lands by the proceeds of a single *cotton crop*, I have been the friend and attorney of both buyer and seller; have drawn the papers and attended to the payments; and as to the net profits of fifty dollars per acre, I have in every case as high evidence as human testimony can impart. I have repeatedly within four years past, on very poor lands, achieved the result myself, and have the assurance of similar results from neighbors and friends, whose veracity and accuracy are perfectly reliable, and *this* upon lands the gross value of whose products per acre in corn, wheat or oats, would not have exceeded (with the same manure)

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* An Essay prepared for the State Agricultural and Mechanical Society of South Carolina, by Wm. M. Shannon, and intended for the Spring Meeting of 1873; but, being unfinished at the time, was not read before the Society.

twenty-five or thirty dollars. The negative proposition that such results could not have been produced by any other of our staple crops may be questioned, of course, but can be demonstrated. The cases to which my mind now reverts, in which the purchase money of farms was paid by a single cotton crop, and where fifty dollars per acre of net profits were realized, are thin upland, sandy soils; and the highest expenditure for manures per acre, commercial and domestic, was twelve dollars per acre, and *this* was exceptional. Generally it was from six to ten dollars. On such lands I have known no such results from any other crops, and do not expect to do so until the lands are pretty well made over again. By the test of actual experiments on my own lands, repeated again and again, changing the same acres from corn to cotton, and vice versa, and by the test of observation on lands of my neighbors and friends, I have seen the demonstration of the fact, that one thousand pounds of seed cotton, worth any year since the war from $50 to $60, can be produced more certainly and more easily, on an acre of thin upland, at a cost of $20, than can twenty bushels of corn at a cost of $12, corn being, in my judgment, the least profitable crop grown on the uplands of this State. In oats, these lands will as certainly produce $20 in value, at a cost of $5 per acre, and will, by judicious management, be very materially improved instead of exhausted, as by corn culture.

When, if ever, we can make sandy uplands, which can now be easily made to produce from 1,000 to 1,200 lbs. seed cotton as easily as 20 bushels of corn—produce from two to five tons of clover or Timothy, or 1,000 bushels of mangel wurtzel or turnips, and have the sheep to utilize them, or a market to sell them in, then, and not until then, will cotton have a rival, as a market crop, on the uplands of South Carolina.

It has become fashionable to carp at the cotton plant and cotton planting, and to hold the fleecy monarch responsible for all the mishaps, miscarriages and mismanagement of those engaged in its culture.

My friends, the men who fail in cotton planting, would fail with the same management in any other pursuit. You can not put such men "in clover," or rather you can not keep them there. I think it cannot be gainsayed that the cotton plant is the specialty of our soil and climate. You may aid—you may modify the influence of the laws of nature, but you cannot reverse them. Recorded time shows that the clothing of civilized man has been provided from four sources—wool, silk, linen and cotton; that cotton is far superior to them all, and that no country has ever produced cotton so successfully as this does. Do the opponents of cotton culture then expect to convince cotton growers that in all these thousands of years the producers of cotton have been clothing the world gratuitously? Do they expect by carping to contradict every man's experience with his balance sheets? Can they furnish any other solution for the contrast existing between the South Carolina of to-day, and the South Carolina left by war and Sherman in 1865, but the growth of cotton? Spite of old complications; spite of fraud, corruptions, unequal, unjust, and burdensome taxation; spite of political interferences and oppressions, and spite of inefficient labor, we have prospered by and through the cotton plant.

Flax is unsuited to our climate and soil. We are not poor enough, and labor is too well rewarded, to embark in silk culture; and when one man's labor will produce more human clothing per annum than would five hundred choice, well-bred sheep, it will be a difficult matter to make *our* farmers believe that Merino wool is the golden fleece, and cotton valueless. Our soil and climate are not only not specially adapted to grain and meat products, but we are surrounded on all sides, within easy reach, by lands that would furnish the granaries and butcher-shops of the world.

Cotton-planting is sadly mismanaged. What pursuit in life is not? But visit not upon the Royal Plant the misdeeds of his improvident subjects. As an article of human clothing, cotton is unsurpassable; and if cotton-seed were properly utilized, its value for food on most of the uplands of this State per acre would equal the value of the product of corn or wheat; and applied to the land as manure, re-produce itself again, covered with the snowy fleece, to be separated and sold every year, without injury to the land from which it is taken. The argument against devotion to the cotton plant, must stand upon a better basis than that—on a soil and in a climate specially adapted to this prime necessity of human use. "It is ruinous to produce it." Our people know better. The same line of argument would stop the production of food,—indeed, would demonstrate that all producers work for the benefit of middle-men—the non-producers, speculators, etc.—and that all industrious pursuits are profitless, which would be "*Reductio ad absurdam*," as it is evident that all the world—the producers and non-producers—are clothed and fed; and all accumulated values result from those who dig, delve and spin." All other pursuits but contribute to the comfort, convenience, pleasures, cultivation, improvement and civilization of mankind—these to his necessities,—and next to the first necessity, food, stands this great clother of man, the regulator of finance and exchange; and I believe, next to the true hearts of her yet brave sons, and fair daughters, the best and most efficient friend of our sorely tried State. The Weathersfield maiden, whose fingers produce one hundred dollars worth of onions from her garden is heralded as a pattern of excellence, and I would be the last to detract from her well-earned meed of praise; but my heart and mind well out with greater admiration and sympathy for the Confederate widow or orphan, who from a fragment of the old family garden, produces a bale or two of cotton, though the latter be jeered at for their "patch."

While, then, it may be well to the interest of a single farmer, or many single farmers, to plant cotton exclusively, yet it would be exceedingly injudicious to cultivate cotton generally, to the exclusion of other crops, for various reasons; for, clamor as we may against speculators and middle-men, the statistics of the cotton trade and cotton crops, demonstrate that the great laws of supply and demand rule the cotton markets as they do all other markets, and while "watering stock" may be a judicious course in financial institutions occasionally, it is a hazardous course in any other than a *strong body*. So, if we produced, with our present population, seven millions of bales of cotton, we would realize no more from them than from three-and-a-half millions, and the proceeds of our seven millions of bales being an exclusive product, we would out of that have to buy our food, etc.

Again; mixed husbandry, and a rotation of crops, are essential to the improvement of worn lands. In this mixed husbandry, oats, succeeded by peas, afford moderately remunerative and direct returns; but are of great value in the recuperation of fertility—are directly more profitable than corn, require less labor and expense, and corn is an exhausting crop; while oats and peas combined are restorative. While yielding to the force of these reasons against the general plan of exclusive cotton planting, I am not in accord with the idea that a corn, or any other *provision* crop, can be worked in the leisure season of a cotton crop; for it requires a whole year to prepare for, work and gather a cotton crop. To illustrate: One of the most energetic and successful young farmers I know had last year, only eighty acres of open land, he planted sixty-two acres in cotton, and eighteen acres in oats, in October, he harvested his oats on 14th, 15th and 17th of June, and immediately planted the eighteen acres in "yellow Dent corn." The result was very favorable—made oats and corn sufficient for two mules and six hands; but the labor and expense bestowed on the double crop was about the same per acre that he bestowed on his cotton crop. While the product per acre of the corn, oats, and peas combined was not $30, the product of the cotton was $45 per acre.

Another prevalent idea is based in error, viz: that the prudent, careful men, who have raised their corn and bacon, and made moderate cotton crops, have grown rich because of this system. I have known and honored many such men; but I know they prospered in spite of this plan, rather than in consequence of it. They prospered, because they carried prudence, care and economy into every thing—they did not make so much money but they saved it, and saved it too in other matters than corn and bacon.

Another common mistake is, that the living of the farmer's family should be charged against the crop. That this is delusive may be seen from the facts that the size and expensiveness of farmers' families vary as much as does the capital embarked. The living of one farmer's family would be fifty per cent. of his capital, while another would not be one per cent. Again, many of the most successful farmers I know, combine other pursuits. Some are lawyers, some doctors, some merchants, some divines, some overseers. Why should the farmer support the families of the lawyer, doctor, etc.?

The argument that would require the farmer to produce his corn and bacon regardless of expense, would require him to produce his sugar, syrup, mutton, wool, tobacco, rice, &c., and would require the cultivation of rice, sugar, cotton, etc., in the great grain and meat region of the Northwest. The plain rule is, to produce what you can produce cheaper than you can buy it.

Again, a prevalent idea is that the expression of opinion of the value of the cotton crop trade to over-production and should be suppressed. It would be very idle to attempt to conceal the value of the cotton crop, and the position is very inconsistent for those who hold that cotton culture is unprofitable—"it is blowing hot and cold"—but we need not fear excessive over-production. The class of laborers who are now spreading the area of cotton culture are being withdrawn from the control and direction of skill, intelligence and capital, and do not produce in their *independent life* as much cotton on five acres as can be produced on

one. Over-production can easily be accomplished; it would be a great boon to the world, except the cotton planter, and I, a cotton planter, would rejoice in that consummation, because I believe it can only result from the introduction among us of an orderly, quiet, industrious people, rehabilitating the State in intellectual, moral, social, political and pecuniary garments, unspotted with the corruptions and frauds of the times. The increased values of lands, varied industrial pursuits—railroads, manufactures, schools, churches and colleges, reduced taxation and healthful government, would be a rich compensation for the diminished profits on cotton. God speed the day, then, when an industrious, intelligent, virtuous, and well governed people, shall, in our now stricken South, annually contribute ten millions of bales of our beautiful fleece to the clothing of the world, draping mankind in the white robes of peace.

A Plan for Associated Agriculture on a Large Scale.

Why do not farmers take lessons from the successful business men engaged in other pursuits, and particularly from manufacturers and transportation companies, and combine their capital and skill in associated effort? Association and co-operation are the watchwords of the day. The farmers are beginning to learn them, but they do not yet seem to recognize their full meaning. They see that the power which builds railways and runs cotton manufactories is associated capital, skill and labor, but they do not see the application of this principle to Agriculture. In a single branch, where farming and manufacturing naturally meet and run into each other—in cheese-making—they have tried association and co-operation and their success has proved the correctness of the principle and its general application. After each farmer in the great dairy districts has been making cheese and butter for generations on his own premises, and with the same indifferent success which characterizes farming generally, it has at last been discovered that there is a better way, viz.: through associated dairying. Cheese factories produce better cheese than was ever known before, do it at greater profit, and have relieved the farmers' families of an immense amount of drudgery. Butter factories are now talked of and associated farming as a general business will follow. How can it be done? A writer in the New York *Times* sketches the following plan:

Form a stock company, buy a farm or several contiguous farms, the cost of which shall be proportioned to the amount of capital it is proposed to invest, though exactly what that is is a point which experience will have to determine, in part. This association may be composed of any moderate number of working farmers, or perhaps none at all, as business men, under such a system, might invest in lands, furnish some skilled manager the necessary capital, and let him go ahead and employ such subordinates as he saw fit. But the first business of any association after organizing would be to select this manager or superintendent, who should be the executive officer, and who should be accountable, not to individual members, but to the directors alone. The success of the plan, of course would depend almost entirely on the competence of this manager for his place, but as it is common to find some successful farmers in almost every town, it does not seem any great stretch of fancy to suppose that plenty of men can be found to manage 1,000

or 2,000 acres of land as well as a hundred or two provided they are furnished with the requisite capital. In case the company consisted chiefly or entirely of farmers who had combined their capital, their proper course would be to work for the company at regular salary, duly agreed upon, and of course share in the profits or losses of the enterprise. This would be business-like; there is nothing impracticable, nor visionary, nor communistic about it.

There would naturally follow a division of labor, that is each laborer be assigned to duties for which his qualifications, as proved by experience, best adapted him. One man could handle costly tools with more profit to the company than to keep him at hoeing potatoes or corn; another would exhibit a taste for stock; another show marked proficiency in fruit culture; another, with a "knack" for trade and "dicker," could be assigned to do the marketing—the buying, selling, shipping, &c. During the busy seasons these best men would naturally be assigned to the foremanship of squads in their various departments, with pay to correspond to their skill and responsibility.

The advantages of such a system, without further enlarging upon them now, might be thus enumerated:

1. It would cheapen production. The aggregate of capital and cost for successfully working a large farm in this way would be much less per acre than if divided and employed in the present way.

2. The production per acre would be increased. The aim of a good manager would be not to see how much land he could skim over, but to put on each acre the greatest profitable amount of manure and culture.

3. The members of the association would find themselves relieved of a large amount of care and torturing anxiety as to mortgages, payments, marketing, &c. This would rest, if anywhere, upon the directors and manager; but, fortunately, these would be the parties best able, by skill, foresight, and prudence, to shoulder such responsibilities.

4. The system would be a long step toward that co-operation among all farmers respecting sales which must ultimately come if they are ever to stand on an equality as to business rights and privileges with other business men. Then it would be easy to form town, county and State associations, and a national association from these, to be represented in the city by a board of trade, which should fix prices from day to day at a living profit to the growers.

5. The managers or representatives of associated farm companies, with great crops to market, would receive that of deference and respect from commission dealers and transportation companies which is now paid to all heavy customers, but is usually denied to "small-fisted farmers." In case of losses through negligence on railroads or after delivery to commission men, claims could be collected with comparative ease, because of the fact that such associations were too good customers to lose, and had the financial power to enforce just claims.

6. The repelling social isolation of farm life would, in a large measure, be broken up. With a number of families living on the same farm, and in some cases under the same roof, there would be sociability, a pleasant division of household labors, and some leisure to be shared by all in turn for literary enjoyments and culture. There would be an agricultural library for reference of course, and a small outlay —almost insignificant among a dozen or two of associate families—would place the best magazines, papers, and books of the day within the reach of every member. In a word, so far as one can foresee, no pleasure now enjoyed by families, individually, would be denied, while all would be increased.

The foregoing plan is given simply as an outline sketch and by way of suggestion. A good business man, familiar with partnership and stock company operations in other branches of industry, could easily elaborate the details; and right

here is the place to put such a system to the test. The sea island and coast region of the South Atlantic States, if ever again brought into general and profitable cultivation and made prosperous and wealthy, must be redeemed by associated capital and skill, controlling effective and intelligent labor. The country can not be settled and cultivated by small farmers because not healthful, except in particular localities, during summer, and it is essential to the success of such farmers that they reside on the lands they cultivate. A company could readily and cheaply move its whole white force to and from the malarious parts of its domain every day, its home-place being a salubrious sylvan village in the piney woods, or on some coast or river bluff, where neither malaria or mosquitoes ever come. Each associated farm should embrace, or lie within easy reach of such a site for its homes; but finally, perhaps, the same principle of associated action, carried still further might inaugurate a general system of drainage which would render the whole region healthful. Who stands ready to be a pioneer in associated agriculture in this beautiful "Low Country" of the South?

Notes from the Indian River County.

I am happy to write you, Mr. Editor, from my new home, twelve miles below Sand Point, where I arrived 20th last January.

Oranges and Orange Culture.

I found my place and grove overgrown with the bushes and weeds of three years unavoidable neglect; yet some of the orange trees set out and budded three years before had struggled through these difficulties into bearing, and are now ten feet high, and are laden for the second time with fruit; many others had maintained a sickly existence, but with cultivation and care have changed their autumn hue for that of richest summer. My nurseries of sweet seedlings have done well, and I have a home supply for all I want.

The orange crop here is not considered an average one. The old trees on the river are comparatively few and very full, while five-sevenths of the whole number (estimated at about twelve thousand besides those in nurseries,) are less than five years old, with so vigorous a growth that a full crop may not be expected, which is better for the future of the groves. I suppose that not more than half the trees or stumps planted here within the last six years have lived, and many of that number have not done well. Trees were roughly torn from the natural groves, kept in the sun several days without protection, slovenly planted, badly cultivated, or left to take care of themselves, under the mistaken idea that orange groves, richly laden with golden fruit, could be made in a few years with this sort of treatment. One man had put out by contract eleven acres at one hundred and twenty-five dollars per annum four years ago, who has now scarcely a remnant of living trees; while others who mixed, mind with energy and experience, scarcely lost a tree, and are now reaping their reward.

To give you some idea of what may be done in the orange business here, I will give you the success of a man sixty years old, who came here nearly four years ago. He gave $600 for a piece of ground with a cabin on it, and 150 sour stumps, partly budded from sweet trees, only fifty of which were in rows for want of cleared ground. He now has as the result of his own labor, and the hire of a man a few months, 800 healthy trees, and a nursery from which to draw as he clears more room. A row of bananas are between each row of trees, which are from six to ten feet high, and in bearing. He has wisely refused $6,000 for his grove. His plan was to leave most of the cabbage trees standing, (as they did no injury to, and protect the trees and bananas from frost and wind,) and rot everything else on the ground. Not a bush, and scarcely a weed or bunch of grass is to be seen in his grove, while in the older part only the larger logs remain. It has been ploughed, and about half of the trees are now full of fruit.

This gentleman has learned that a tree budded with a leaf instead of a thorn, will make a thornless tree, and that a sweet seedling budded from a bearing tree, will bear in from one to two years. He has a bud one year old in a seedling which has eleven oranges on it.

Dr. Wilson, at Sand Point, has a seedling on pine land which bore at the age of five years 113 marketable oranges. On my place is a sour budded tree two years old just now, which is full of full grown oranges. Every man, however inexperienced, does his own budding, and trees are often scarred almost fatally before a bud will take.

Citrons, lemons, limes, bananas, guavas, and, in fact, all the semi-tropical fruits, grow to great perfection here, with occasional injuries from frosts.

The orange crop of last year was sold at fifteen and twenty dollars per thousand on the trees. The last of Dummitt's crop was re-sold to Mr. Hart, the owner of the famous grove at Palatka, for fifty dollars per thousand, while some held still later brought eighty dollars.

The Corn Crop—Valuable Peas.

The corn crop is very good. Better seasons I have never seen anywhere. Corn on high hammocks will average twelve to twenty bushels per acre, while that on marl land will average from twenty to fifty. Mr. John C. Feaster, (Sand Point,) has a piece of corn in six feet rows, averaging four inches in the drill, which is attracting some attention on account of its fine appearance and large yield. The crop is now made, some planters are pulling fodder.

The pea crop is promising well. The speckled and conch varieties are mostly planted. The former bears early and full, while the latter runs much to vine, bears late and full, and is considered the best of table peas, resembling beans when cooked. No insects trouble either.

Oats and Potatoes.

What few oats I saw were good, but were planted rather late. On marl land I saw some mammoth bunches of new varieties, which rusted in heading. Some of the heads were eighteen inches long, and some single bunches had fifty of these unma-

tured heads. It was thought that had they been planted in September or October, they would not have rusted.

The potato crop, for winter use, is now being rapidly planted, and the seasons are fine. "The Standovers," for spring and summer use, will be planted in September and October. I saw a potato on the scales, supposed to have been the growth of two years, which weighed 18½ lbs. Mr. Geo. Willard says he raised five of these two-year potatoes, the smallest of which would weigh 12 lbs. He raised in one season seven from one hill which weighed 40 lbs., and yet many of these people are without potatoes.

The Sugar-cane Crop.

The cane crop though small is promising good stand and in good condition; each farmer has a small patch, the largest not over five acres. This is all that can be managed with the present one-horse machinery. The green cane granulates well even on marl land. The syrup is thick and very bright, and sell at 50 cents per gallon.

"Some Pumpkins."

The pumpkin crop is always good. Canary Island, which grows to perfection on the poorest lands, and makes two crops per annum. Vegetables of nearly all kinds grow to great perfection. Cabbages, turnips, beets and Kohl-Rabi grow to great size. Nothing is manured. Mr. Jacob Feaster produced two cabbages which weighed last week 21½ and 23½ lbs., measuring 13½ and 15 inches in diameter, all solid.

Truly a "Land of Flowers."

Flowers (last but not least) grow in lovely profusion. In the yard of Mr. Feaster is a bed of Fish and Rose Geraniums, Arabian Jasmines, Pinks, Phlox, Petunias, Verbenas, and many other beautiful flowers, mingling in lovely contrast, while in the spaces between the orange trees are Plumbagoes, blooming, and at the same time hanging with golden berries; Mammoth Geraniums, three feet high by six in width; Cape Jasmines; Roses of different kinds, with over one hundred well formed buds to a single cluster, and many other flowers.

Climate and Health.

The climate is more delightful, if possible, in summer than in winter. The days are sometimes warm but not oppressive, and the nights are cool. The flesh of a hog weighing 200 lbs. can easily be saved, so cool are the nights and pure the atmosphere.

The health of the country is very good, many wonderful cures are attributed to this climate, and *we think* we have found "Ponce DeLeon's Fountain, (in the atmosphere.) Our country, generally, is steadily improving. Churches, schools and agricultural clubs, are springing up as the land is occupied, and we look forward at an early day to the realization of the advantages of our old homes.

WM. H. SHARPE.

Sharpe's Bluff, Indian River, Fla., June 7th, 1873.

Timely Farm and Plantation Topics.

Fences, Gates, and Jumping Cattle.

The fence question is an exceedingly important one, and one that we should be glad to see thoroughly discussed, and a practical solution legitimately reached. In the mean time we must have fences, and good ones, or farming will be impossible. A fence, to accomplish the purpose of a fence, must not only be able to "stand alone," but must bear a little jostling. Your cattle may very innocently rub themselves against it. If it tumble down, who can blame them if they walk into the adjoining field, or into the highway, as the case may be? And you underrate their sagacity if you suppose that they will not take a hint from the accident, and rub again for the express purpose of producing the result obtained before without a purpose. Rail bars are often slipped out in this way. Gates are much better. When bars are used, they should be let down so near the ground that every animal can step over conveniently; nor should they be hurried over so fast as to induce any animal to jump. In driving a flock of sheep through them, the lower bars ought to be taken entirely out, or they be allowed to go over the bars in single file. Animals will seldom become jumpers, except through their owner's fault, or from some bad example set them by unruly associates; and unless the fences be perfectly secure, such ought to be stalled till they can be disposed of. The farmer will find that no animal will repay him the trouble and cost of expensive fences and ruined crops.

Cattle and other Stock-Breeding Out Improvements.

The breeder of cattle or any other stock must not forget, that the rule, deviation, works both ways, and that stock may be deteriorated as fast, if not faster, than it can be improved. Improvements are bred *out*, as well as in. We may begin with pure improved animals; we may end with worthless nondescripts. On the other hand, by beginning with grades, or employing the services of an improved male to engraft upon the native stock, and then paying close attention to their care, and to the selection of breeding animals, we may soon witness a wonderful change for the better in our herds and flocks, produced at a trifling cost of money and time. The farmer, who has no time to attend to his stock, or who thinks that stock does not pay, has no business with improved breeds.

The Quantity of Seed Required for an Acre.

The quantity of seed to be sown per acre, varies with the quality and condition of the land, and to some extent with climate; but the following table may be taken as a general standard, to be modified to suit particular circumstances:

Wheat	1½ to 2	bushels	
Rye	1½	"	
Oats	3	"	
Barley	2	"	
Corn in hills	4 to 6	quarts	
Corn for fodder	2	bushels	
Broom Corn	½	"	
Peas	1½ to 2	"	
Navy Beans	1½	"	
Castor Oil Beans	3 to 4	quarts	
Red Clover	8 to 10	pounds	
White Clover	4 to 6	"	
Timothy	8 to 10	"	
Orchard Grass	2 to 3	bushels	
Blue Grass	2	"	
Turnip	1	pounds	
Beet (field)	4	"	

Horticulture and Rural Adornment.

Horticultural Hints for August.

In order to have a good fall garden and a supply of all the vegetables proper for the season, considerable planting must be done during the present month, when the heat and drought often render it difficult to get a stand. Extra care in planting, watering and shading when necessary, and one or two re-plantings, in case the first fails, will, however, generally ensure success. Take advantage of showery weather, which may generally be counted upon during this month, to put in your seeds, and to transplant cabbage, cauliflower, kohl rabi, etc. A shingle or a bush stuck on the south side of each plant, to afford partial protection from the sun, will increase their chances of surviving. Protect the rows of young beets and carrots in the same way, continuing to sow, from time to time, till a good stand be obtained. Sow also spinach, lettuce and radish.

———It is considered best to procure European cabbage seed for sowing during this month and later, as the plants from such seed are less liable to run up to seed; we have, however, had good success with American seed. Turnips may be sown any time during the month. Let the ground be very deeply spaded and made very rich. A dressing of some kind of phosphatic manure should be given, if practicable, no matter how much stable manure may have been dug in. Toward the last of the month, or early in September, onion seed should be sown. Scatter the seed thick in drills, the young plants to be transplanted in October and November, snap-beans may still be planted in the lower South and will make excellent crops; also garden peas, as directed in the July number, and Irish potatoes, cucumbers and squashes for a fall crop.

———It is now time to commence transplanting celery, if the plants are sufficiently grown; also, tomatoes for the latest crop. Cuttings may be used if no young plants are at hand. Take young shoots about a foot long, remove all the leaves except the terminal ones, and insert them in good mellow, moist soil, leaving only an inch or so above the surface of the ground. Shade them for a few days, and they will make excellent plants.

———In the fruit garden, budding is now in order, and should not be neglected where more trees are needed. In the Rural Carolinian, for June, 1870, p. 553, may be found complete directions. Anybody can insert a bud so that it will "take," provided a little care be exercised, as the process is a very simple one. Layers of roses and other shrubs may still be made, and if the ground be moist, the best success is often attained at this season. Cuttings of roses also may be made and set in a shady situation, watering frequently.

———Cuttings of the soft wooded plants, such as geranium, heliotrope, salvia, cuphea and ageratum, can now be successfully struck. Directions may be found in several back numbers of the Rural Carolinian. Keep flowering plants well

tied up. gather seeds and procure and get ready those of hardy annuals, biennials and perennials, for sowing in September and October, not forgetting pansy, larkspur stocks, wall flowers, calliopsis, pinks, hollyhock, lupine scabiosa, (mourning bride,) verbena, petunia, and other well known old fashioned but excellent plants.

The Sanitary Value of Flowers.

Wordsworth sings that

> every flower
> Enjoys the air it breathes:

whilst the chemist adds that by its breath it purifies the air for the service of man. Not content with this, modern chemical research is engaged in determining other and unsuspected uses for what have hitherto been considered, in their forms of grace, their various hues, and fragrance, to minister only to the æsthetic wants of mankind.

When these researches, two or three years ago, first began to attract the attention of those interested in sanitary science, the writer, then connected with the health department of a large city, found a fitting field in the low, swampy surroundings, filling the air with malaria, and in the neighborhood of the numerous slaughter-houses, reeking with animal exhalations, in which to test the value of their deductions. Here, in the vicinity of some of the most beautiful natural scenery in the world, rendered almost uninhabitable,—as at Staten Island, at numerous points along the Hudson and elsewhere—by the presence of malaria, there is abundant incentive for urging the speedy carrying out of a measure of reclamation at once inexpensive, attractive and effectual—namely, the cultivation of odorous and romantic plants and shrubs in all regions where either animal or vegetable miasms abound.

That our readers may be able to judge of the probable effectiveness of such a measure, we present the following *resume* of the researches above referred to, as well as the collateral evidence of the long recognized hygienic and sanative value of perfumes in general. It should first be premised, however, that *ozone* (from the Greek, to smell) is one of the forms under which oxygen exists in the atmosphere; was accidentally discovered by Van Marum in 1785, but was not investigated until about 1840 by Schonbein; who found it to possess powerful properties as an oxidant, disinfectant and deodorant; was found by C. Kosman to be exhaled from the green portions of all plants; and is now receiving, as manifested by the recent publications on its nature and properties, the widest study and attention.

It is to the investigations of an Italian *savant*, Professor Paolo Mantegazza of Pavia that we are indebted for the information that this great atmospheric purifier is generated in larger quantities by certain plants and fruits possessing spicy aromatic odors, than it is by the action of electricity upon the air, the potent influence of which in purifying the atmosphere we all recognize and are grateful for after a thunder-storm. This ozone is developed in some plants by the direct rays of the sun, whilst in others, the action, once commenced in solar light, is continued in darkness; cherry-laurel, clove, lavender, mint, lemon, fennel, narcissus, heliotrope, hyacinth, mignonette, etc., as well as some perfumes, as eau-de-cologne, oil of bergamot, extract of millefleurs, essence of lavender, and some aromatic tinctures, all produce ozone largely on exposure to the sun's rays. Mantegazza has further pointed out that the oxidation of the essential oils, such as turpentine, nutmeg, aniseed, thyme, peppermint, etc., under the influence of light and air, is a convenient source of ozone, as they, even in small quantities, ozonize much of the atmospheric oxygen.

He finds, also, that while the ozonigenic properties of flowers reside mainly in their perfumes—the most odoriferous yielding the largest amount of ozone—certain others possessing no particular perfume, have extraordinary ozonigenic power; as, for instance, the sun-flower, broad belts of which were planted by the late Commander Maury, around the grounds of the National Observatory at Washington, and to the effect of which he attributed the after immunity of his family from intermittent fevers, previously quite prevalent in that neighborhood. Dr. Cornelius Fox also states in his work on ozone and antozone, that the cultivation of this gaudy plant (*helianthus annuus*) in malarious districts has been specially urged, as it is said to possess the property of purifying the air laden with marsh miasm, and of exhaling ozonized oxygen.

Prof. Mantegazza demonstrates in his report on the action of essences and flowers in the production of atmospheric ozone and their hygienic utility (*Rendicouti del Reale Instituto Lombardi,*) that the instructions of Empedocles, in the second book of his didactic poem on Nature, to plant aromatic and balsamic herbs as preventives of pestilence, were founded on a close observation and shrewd, though empirical insight. The historian Herodian relates that, in a plague which devastated Italy in the second century, strangers crowding into Rome were directed by the physicians to retreat to San Lorenzo, then called *Laurentum*, from the bowers of laurel which surrounded it, that by a cooler atmosphere, and by the "odor of laurel," they might escape the dangers of infection.

The practice of burning aromatic woods and herbs, as well as odorous gums, spices, etc.—not to speak of the use of tar-smoke, the antiseptic properties of which are attributed to carbolic and other acids—as a means of arresting the spread of, and extinguishing epidemics, is of the highest antiquity. Numerous instances are cited of the extinction of the plague by means of fires of odoriferous wood, green laurel, worm-wood, chamomile, etc., in the market places, and even in the houses both of the healthy and the sick. Their efficacy, it is now claimed, was due to the production of ozone, by which the pestilential constitution of the atmosphere was purified.

Within the limit of these pages it is only possible to hint at the sources of information, and this only to give weight and authority to the practical suggestions of measures affecting the great problem of the prevention of disease and the preservation of health. These suggestions, in the present case, are obvious, and will, in some degree, supplement the recent recommendation of Dr. Stephen Smith concerning the cultivation of shade trees in the streets of cities as a means of diminishing the high mortality of summer by modifying the temperature, and by purifying the atmosphere.

What we would here urge is the cultivation of plants and flowers possessing these desirable ozonigenic properties, alike in city and country, within doors and without. In cities because the air of cities always contain less ozone than the air of the surrounding country, and the denser parts of cities less than the more sparsely built, or than the air of parks and squares. In the country, because very few regions are entirely free from malarial taint.

They should be cultivated in and around schools, and all other places where animal exhalations abound, especially in the districts where slaughtering and kindred occupations are carried on, and in grave-yards and cemeteries.

Aside from the poetical and æsthetic aspects, the florist and the nurseryman and the seedsman may put in a plea for consideration on purely utilitarian grounds. Instead of such disinfectants as those that have been described as chiefly of value because "they smell so badly that people open the windows and let the fresh air in," they will furnish us each

> Daintie flowre and herb that growes on ground,
> To bud out faire and throw sweete smels around.

And it may yet come to pass that he who makes two flowers to blossom where only one bloomed before shall receive the encomium Dean Swift suggested for the successful corn or grass grower.

The editor of *Hygiene*, (New York, G. P. Putnam's Sons,) from which we copy the foregoing article, issues, in connection therewith, the following queries, for the purpose of eliciting facts bearing upon the sanitary value of flowers and odorous plants. We shall be glad to aid in this good work, by publishing, or forwarding to the editor of *Hygiene*, any information on the subject which our readers may be able to furnish:

1. What is the popular opinion of the effect of odorous plants on health?
2. What plants are believed to affect the health favorably by their odors?
3. What plants are believed to exert injurious effects by their odors?
4. What diseases are believed to be affected by odorous plants, and how—favorably or unfavorably?
5. Have you noticed any exemption from such diseases as fever and ague, or other malarious diseases, by those engaged in floriculture?
6. Do you know any instances of the health of a neighborhood having been beneficially affected by the cultivation of flowers? If so, what diseases were modified or checked, and what were the flowers and plants to the cultivation of which the result was attributed?

The Flemish Beauty Pear.

This is, as its name indicates, a very handsome pear, and often a very excellent one in every way, but unfortunately it does not succeed in all localities, and is often of inferior quality. The fruit, at its best, and house-ripened, is juicy, melting, rich, sweet and fine-flavored. The tree is vigorous. The fruit sometimes cracks. It is not trustworthy as a market fruit, except in a few localities.—[*See frontispiece.*]

Seasonable Orchard and Garden Notes.

Single and Double Flowers Again.

Mr. Adolph Friendly, of North Santee, South Island, S. C., a gardener with an experience running through forty years of active horticultural life, sends us his contribution toward the solution of the double-flower problem. He says: "When I was a boy, I was told to plant German stocks the day before Good Friday. I did so, and not a single flower was to be seen among about one hundred plants. A few years afterward, I tried this again, with the same result. I have since tried this time of planting with dahlias, pinks and carnations, and all have come out double. Now, nature, of course, has no regard for Good Friday, or for the sufferings of our Saviour, but as Easter Day follows the first full moon after the spring equinox, Good Friday is always more or less near to the full moon, and learned men among all nations acknowledge the influence of the moon on animal and vegetable life. Here, then, we must look for the reason why plants bearing single and others bear-

ing double flowers, may be obtained from the same package of seed, portions being sown at different times." Now, without having any faith in our correspondent's lunar theory, we are glad to put on record his observed facts, for it is not impossible that they may contain a hint towards a solution of the vexed question regarding the production of single and double flowers, in certain cases. Planting at a particular season, rather than earlier or later, be the moon in whatever phase it may, effects, perhaps, in some way, the re-productive powers of the plant, and tends to the production of double flowers. It will be well to make careful observations on this point.

The Marblehead Squash.

Our readers may remember our notice (with illustration) of the new squash disseminated this season for the first time, by Jas. J. H. Gregory, of Marblehead, Mass., and so highly recommended. As Mr. Gregory is an honorable seedsman, and a trustworthy man, we gave full credit to his statements; but when we planted some of the seeds he was kind enough to send us, we had little hope of being able to report any success, as the squash-vine borer generally destroys all the finer kinds of squashes here before they have matured their fruit. The vines grew very strongly and rapidly, however, and in spite of the borer, which finally attacked them, ripened a very good crop of squashes; and they were simply delicious—*decidedly better than any other squash we ever ate.* The Marblehead Squash is a valuable acquisition. We hope Mr. Gregory will be able to keep the variety pure. In our gardens, where other cucurbitaceous plants are grown, it will soon deteriorate by crossing.

Changing the Colors of Flowers.

Much that is interesting and novel can be effected in altering the colors of flowers. White Roses, it is said, can be made yellow, yellow Roses pink, and pink Roses of a deep red, by the admixture of soot or finely powdered charcoal in the soil. Hydrangeas can be changed from pink to blue by the addition of iron filings to the earth over the roots. The *Gazette des Champagnes* says, that M. Hucghe has succeeded in changing the common cowslip from its natural yellow to an intense purple by merely transplanting it into richer earth. The color of plants can be readily varied by mixing certain substances with the soil. Wood charcoal will darken the hue of dahlias, petunias, and hyacinths. Carbonate of soda turns the last mentioned flowers red, and phosphate of soda alters greatly the shades of many plants.

Indulging in Floral Luxuries.

A lady friend of Kosciusko, Mississippi, writes, "Vick's Floral Guide" says, that a neighbor lost a portion of her bulbs in a very singular manner. "The Bulbs," she writes, "that you sent Mrs. C., were received in good condition, and gave much pleasure by their healthy appearance, and they were put carefully away, but unfortunately she had a thievish little freedman about the house, and one day, in his search after dainties, he found her bulbs, and thinking they were choice onions, actually *ate, devoured, swallowed down* more than half she had, and among the rest her Auratum Lily, a dozen Tulips, Hyacinths, etc. If that darkey blossoms the coming Spring, I will let you know, that you may class him among the *novelties.*"

Natural History Applied to Agriculture.

Specimens of insects, securely packed, (according to instructions given in The Rural Carolinian, for October, 1870,) with letters of inquiry, entomological notes, etc., should be addressed, (post paid,) to Mr. Charles R. Dodge, Washington, D. C.

The Grape-vine Saw-Fly.

There is a class of insects belonging to the same order, in the insect world, as the bees and wasps, that live almost exclusively on vegetable food. They are inactive, sluggish in habits, having short, rather flattened bodies, and, in fact, differ so much from the bees and wasps in shape and habits, that were it not for their four glassy wings, over-lapping each other when closed, the casual observer, or the beginner in Entomology, would hadly know where to place them. They are called "saw-flies," and take the name from a peculiar arrangement, like a saw which rests in a groove under the hinder part of the body of the female, shutting like the blade of a knife into the handle. There are in reality two saws, so fastened, with their ends pointing backward, that they can be readily dropped from the groove, and moved backward and forward at will. Harris, in describing this neat little arrangement, says: "each of the saws, like a carpenter's fine saw, has a back to steady it; the blade, however, is not fastened to the back, but slides upon it. This saw-blade is not only toothed on the edge, but is covered on one side by transverse saws of very fine teeth, giving it the power of a rasp as well as that of a saw." The use of this little instrument is to make perforations in the stems or leaves of plants in which the insect afterwards deposits its eggs.

The larvæ, (called false caterpillars,) developing from these eggs, are very much like the larvæ of butterflies and moths. Their bodies are rounded, and in color are usually greenish. They are provided with a greater number of legs than true caterpillars, there being from eighteen to twenty-two, forming a characteristic feature. Their bodies are very smooth, naked, that is, not covered with hairs, and when disturbed they generally roll themselves up. There are many varieties of saw-flies, and some of them are quite injurious to vegetation, as, for example, the pear slug, the rose slug, the currant worm, etc.

The vine saw-fly, (*Selandria vitis,*) which we are noticing at present, is about a quarter of an inch in length. The body is black, with the exception of the upper part of the thorax, which is red, or, as in the specimens before me, orange-red. The under-side of the legs are whitish, the wings are smoky or semi-transparent, and are marked with dark-brown veins.

The eggs are deposited in the spring, at which time the fall brood of insects issue from the ground, after remaining in the soil all winter, and the larvæ may be seen feeding in July, on the under-side of the leaf, in little companies of a dozen or more. Their manner of procedure is to begin at the edge of the leaf, and to eat the leaf to the very stalk, and when one leaf is exhausted, they go to another.

When mature, they measure a little over half an inch in length. The body is pale green, the head and tail black. The under-side of the body is yellowish, and

they are provided with twenty-two legs. Just before leaving the vine to burrow in the ground, they become almost entirely yellow.

The pupæ is formed in little oval cells of earth, lined with silk, and in about fifteen days, the perfect insects appear, and lay their eggs for a second brood.

In regard to remedies, Harris recommends air-slacked lime, to be dusted over the insects upon the vines, and strewed upon the ground beneath to catch any insects that may chance to fall, or that are making ready to change to pupæ. Strong soap-suds is also mentioned—probably intended to be applied by means of a garden syringe.

We recommend, for trial, the remedy proposed for the pear slug, (an allied species,) on page 315, March number of the RURAL CAROLINIAN, present volume.

Answers to Correspondents.

INJURY TO ORANGE TWIGS.—C. C. W., Eau Gallie, Fla. Your letter and diseased orange twigs, were referred to Mr. Wm. H. Leaman, for microscopic examination, and he reports as follows:

The orange twigs are affected with a disease similar to the black knot on plum trees in the North. It is caused by a fungus that first shows itself in the white streaks preceding the cracking of the bark. The exudations of sap which are so prominent in the twigs received, are an effect rather than a cause. The disease spreads by little spores or granules floating in the air, that attach themselves to the bark, and grow into white threads just under the outer skin or cuticle of the tree, forming a white cottony mass, that turns into a mass of spores like the first, ready to recommence their ravages. This unnatural growth exhausts the sap and cracks the bark, from which it afterwards exudes.

Lime, sulphur, and carbolic acid are the principal antidotes for the fungus growth, applied early in the season to the outside of the branches. Whitewashing will be beneficial, but plugging the tree is probably of no benefit.

THREAD-LIKE WORM.—Dr. B. The yellowish thread-like worm forwarded by you for identification is, doubtless, a hair-worm or *gordius*, often called "horse-hair snakes," from the wide-spread popular belief that they are produced from a horse-hair. They are often found in their mature state in the bodies of many different insects, as beetles, crickets and grasshoppers, and, doubtless, find their way to the roadside puddles of water, where they are frequently met with from the bodies of these insects.

The eggs are extruded in a long narrow white cord, and hatch in about four weeks, the young *gordius* differing greatly from the hair-worm, the body being constructed so as to appear divided into two portions. It is, apparently, unable to move about, but lies at the bottom of the water, slowly progressing, through alternate protrusion, reflexion and retraction of the oral apparatus. Some of these worms, or young, experimented upon, according to Leidy, entered the larvæ of caddice-flies and May-flies, remaining quiescent as long as observed, and it is thought they remained quiescent till the flies had matured, and had been devoured

by ground beetles, after which the worms came to maturity. *Gordius aquaticus* is a common species.

Another "Big Bug."—Wm. G, Crystal Springs, Miss. The insect sent by you, and which you say "does not belong to the spotted family of bugs mentioned in the June number, but is, perhaps, a distant cousin;" is one of the *Lucanidæ*, a family of beetles that live on the juices of decomposing woods, coming just before the family to which our "spotted bug" belongs, and as both live on the same food it *may* be reckoned a distant cousin.

The larvæ are supposed to be several years in coming to maturity, and the pupa is formed in a rough cocoon of the chips and dust, or gnawings. The insects are met with by day on the trunks of the trees, etc, and the males fly at night in quest of their mates. The species you send is one of the largest and finest, and is known by the name *Lucanus elaphus*, Fab. As this is the only specimen the entomological editor ever possessed, please accept his thanks for the specimen.

The Grape-Vine Saw-flies.—W. J. E., Birmingham, Ala. The pretty flies which you say swarmed by hundreds around your grape-vines, are described under the above name in the present number.

A Remedy for the Corn Worm or Bud Worm.

In the June number of the Rural Carolinian, Mr. Dodge gives quite an interesting and instructive account of that pest of the Southern farmer, the Corn Worm, (*Heliothis armigera*) or Bud Worm as it is called in this vicinity.

This worm is no where, I believe, so destructive in its attacks on the corn crop as in Florida. I have been making it the subject of some observation for the past two years, and propose to give my small experience for what it is worth to the readers of the Rural Carolinian.

With us the worm makes its appearance about the 1st of May, attacking here and there a corn stalk, every day becoming more and more numerous until the 1st of June, when fully one-fourth of all the stalks are infested with it. The usual time for corn planting in this latitude is about the 1st of March, and corn planted in this month, or any succeeding month, is almost sure to suffer quite severely from the attacks of the worm. Some persons plant in January, and if a stand is obtained, generally make a good crop, and are not troubled at all with the worm, as the corn is matured by the first of June. On this account, I should always prefer to plant early.

The worm generally attacks the corn when just about to tassel and I have found the eggs deposited usually on the lower side of one of the inner blades. When hatched it immediately attacks the tender tassel and half developed leaves. Then is the time to destroy it, for, as Mr. Dodge observes, the more of the first brood that are destroyed, the less there will be to trouble you afterwards. I have tried many ways of destroying this pest, and among them the one mentioned by Mr. Dodge, that of stripping down the stalk and picking out the worms one by one. This mode of prevention is a good and sure one for a small field, but it takes too

much time for a large field, and many of the stalks have to be so roughly treated, in order to extract the worm with any degree of speed, that they never recover afterwards.

I have found no method so successful and so quickly and easily performed as the following: I procure a few bars of the common carbolic soap and make a strong soap-suds. If not satisfied with its strength, as it should have a strong carbolic smell, I drop a few drops of the crude acid into a bucket of the suds. With my bucket in one hand and a small dipper in the other, I walk along between the rows and pour a dipper full of the suds down into the cup formed by the young blades, and into which the worm generally retires during the day time. If not immediately killed the worm will crawl up as fast as possible, but soon curls up and tumbles back. One hand will run over an acre, even if badly attacked, in one-fourth of the time it takes to hoe it. The expense is very little and I have noticed that those stalks thus treated are rarely ever attacked by the insect again.

A corn field twice gone over in this manner, if not near other corn fields not thus treated, will remain almost entirely free from the worm.

The same insect here attacks the cotton crop occasionally, and is sometimes very destructive. Last September (1872) I saw a cotton field the stalks of which were entirely bare and divested of their leaves from the attacks of the worm; I believe that we must have in this latitude four broods in a season, for from the 1st of May until the middle of October, its ravages unceasingly continue. In the August number, 1869, of the American Entomologist, Dr. D. L. Phares, of Woodville, Miss., states that carbolic soap has proved a failure in destroying the corn worm on the cotton plant, but does not state how it was applied. With me on the corn crop it has proved a great success as I hope it will with any of the readers of the RURAL that may try it. H. S. KEDNEY.

Lake Maitland, Fla.

MINING AND THE MECHANIC ARTS.

Our Mechanical and Manufacturing Resources.

Every people should feel a pride in the development of their mechanical and manufacturing resources, which are in truth the main-spring of prosperity of communities, as well as of commonwealths and nations. When you see a community without such interests, or a people who allow such interests to languish and die out for want of encouragement, it is an unmistakable sign of the want of that energy and patriotism which have ever been the more prominent characteristics of all prosperous communities, both in the old and new world.

There is no portion of this country better adapted to mechanical and manufacturing pursuits, than are the Southern States. They possess every requisite in the greatest profusion, and, we may say, unequalled by any other section, including water-power, coal and ores, of superior quality, and of almost unlimited supply. As a matter of the first importance to our future prosperity and greatness, these

interests have been too much neglected in the past. We feel a pride, however, in saying that we see evidences of a wholesome change in this important and vital matter. The people of the South are fast awakening to the importance and necessity of a more thorough development and protection of home industries.

We believe the day is not far distant when the capital which has heretofore been diverted from the South into channels which has helped to impoverish those whom it should not have impoverished, will change its current, and be instrumental in developing the mines of wealth that lie hidden at our doors, and which only await the fostering care of the capitalist, to yield their millions of treasure and afford employment for thousands upon thousands of working people. We have the mechanical skill and the willing labor ready to co-operate with the capitalist in the development of these as yet hidden resources of our country, which, if brought to light, would not only make us a rich and prosperous people beyond comparison, but would also make us a more influential and powerful people.

In contemplation of this, to our mind, all-important subject, we have been looking around Charleston, viewing the various mechanical and manufacturing interests at present in operation, giving employment to hundreds of working people, who are the bone and sinew of all communities. As these interests are closely allied to agriculture, we purpose noticing them from time to time, as opportunity and space may offer, believing that in so doing we will afford both interesting and instructive matter for our readers. As a fitting inauguration of our purpose, we will commence with the machine shops and iron foundries of Charleston.

Phœnix Iron Works—John F. Taylor & Co., Proprietors.

These iron works, which are now located on the north side of Pritchard street, in Charleston, were first established in 1844, in Hasel street, immediately north of their present location, by Archibald Cameron, Duncan McDermid and David Mustard, under the firm name of Cameron, McDermid & Mustard. (Mr. Archibald Cameron, of the firm of Cameron & Barkley, is the only survivor of the firm.) After many years of successful operation, notwithstanding the reverses of two destructive fires and the late war, the establishment is still conducted with almost unexampled enterprise and ability by Messrs. John F. Taylor & Co.—the firm being composed of John F. Taylor, W. H. Prioleau and E. M. Troth. The two former gentlemen, (Messrs. Taylor and Prioleau,) were connected with the old firm of Cameron & Co. previous to and during the war—Mr. Taylor as one of the firm, and Mr. Prioleau as book-keeper. Mr. Troth, the junior member of the present firm, is a mechanic of great ability, having acquired his knowledge of his business at the celebrated Allaire Works, New York.

Additions have recently been made to these works by the extension of the buildings, which was rendered necessary in order to accommodate the daily increasing business. The finishing shop and foundry have been considerably enlarged, giving capacity for three or four hundred workmen. There are at present upwards of two hundred persons employed in and about the establishment, affording a daily support to nearly one thousand persons in our community.

To form a correct estimate of the extensive workshops and immense machinery

of the "Phœnix Iron Works," a personal visit is necessary. For us to attempt a minute description of every department and piece of machinery, would occupy more space than we can afford. The lathes, planing and drilling machines, powerful steam hammers, huge shears for cutting boiler iron, rolling and rivetting machines, besides numberless other tools and appliances of the latest patterns and most costly kinds, all required for the successful conduct of the establishment, are truly astonishing to behold. To be brief, there is nothing wanting in all its several departments, from the pattern shop to the blacksmith shop, to enable the proprietors to successfully compete with first-class establishments of the kind in Northern cities. They are prepared to undertake work of any magnitude in their line. They can cast from thirty to forty tons of iron per week, and have recently turned out a ten-horse engine, complete, in five working days, and a pair of thirty-horse boilers in sixteen working days. Should occasion require it, the same work could be done in a much shorter time. It is pleasing to be able to state the establishment is receiving its merited encouragement.

All the members of the firm are practical men in their several spheres. Mr. Taylor is an experienced mechanic of acknowledged skill and ability, and is possessed of an inventive mind, which he has put to practical use in various useful inventions, the most prominent of which is his cotton press, which is fast coming into general use. Mr. Troth also possesses an inventive mind, which, coupled with his mechanical ability, renders him an efficient member of the firm, while Mr. Prioleau, who manages the finances, is a gentleman of equal ability in his department.

Easons' Iron Works—J. M. Eason & Brother, Proprietors.

Easons' Iron Works are located at the corner of Columbus and Nassau streets, in Charleston, where they were first established in 1837, and known at that time as Dotterer's Foundry. In 1847, Messrs. James M. Eason and Thos. D. Eason succeeded to the proprietorship of the works, and have since conducted the business under the firm name of J. M. Eason & Brother. The establishment has, from time to time, since its conduct by the Messrs. Eason, been enlarged and improved, until it now ranks among the first machine shops in the South, both as regards capacity and facilities for doing work.

We will here remark, that notwithstanding Mr. Thomas D. Eason died several months since, Mr. James M. Eason continues the business under the old firm name of Eason & Brother.

We have stated that the "Eason Iron Works" were formerly known as Dotterer's Foundry, occupying the same site. It may not be out of place to make brief mention of an interesting incident in connection with the early history of the mechanical career of Mr. Thomas Dotterer, the founder of the works we are about to describe, and Mr. Robert Eason, the father of the Messrs. Eason.

About forty-five years ago Mr. Dotterer and Mr. Eason were associated in busiiners at the foot of Hasel street, near the site of what was then known as "Johnson's Foundry." They had not only the credit of building the first locomotive ever constructed in Charleston, if not the first built in this country, but also the credit of having made a great improvement in their construction, by introducing

the "outside connection." In the early days of locomotive building, they were constructed with the machinery underneath, instead of at the side, as at present made, and was first introduced by Messrs. Dotterer & Eason. The machinery was then propelled by means of a walking beam, similar to the walking beams to be seen on some steamboats. The incident which we desire to present to our readers is connected with the building and trial of this pioneer locomotive. It was first related in the Charleston *Courier*, in a series of articles prepared for that venerable journal by the present writer.

It is well known that the South Carolina Railroad, at the time of its construction, was among the first, as well as the longest railroad in this country. The locomotive power used to operate the road, in its infancy, was imported from England at great cost and much vexatious delay. The managers, anxious to relieve themselves of these drawbacks to the progress of the business of the road, determined to obviate it as far as in their power, and at the same time desirous of encouraging home manufactures, employed Messrs. Eason & Dotterer to build a locomotive for the use of the road. It appears that in those days, as well as in the present, there were to be found in Charleston men who were ever ready to discourage new enterprises by such remarks as "it can't be done in Charleston"—"it never has been done in Charleston," etc. However, nothing daunted by the croakings of the unbelievers, which daily beset their ears, Messrs. Eason & Dotterer set to work to build a locomotive for the South Carolina Railroad Company, which was not to exceed six tons in weight (less than half the weight of locomotives now in use). The locomotive was finished, having the "outside connection" mentioned above, which innovation of the old plan was condemned by some on the ground that it was impracticable, and would injure the superstructure of the road by the constant shaking it would cause. It was appropriately named the "Native," and put on the road for trial.

There are many persons now living who recollect the trial trip of the little "Native," and the incidents connected therewith. Steam being raised, the engineer in charge was directed to run up the road until he met the down train, and then return to the city. The day passed, and night came on, but nothing was heard of the little "Native." Many were the discouraging predictions made by those who were wedded to the belief that Charleston mechanics could not build a locomotive. Some went so far as to abuse the builders, by saying that the "confounded little thing had broken down, and obstructed the road, thus delaying the arrival of the incoming train." Their surprise, however, was great, when, at a later hour in the night the little "Native" came puffing down the road, drawing the whole train, including the great English locomotive. It seems that the engineer, in pursuance of instructions, proceeded up the road until he met the down train, which was at a much greater distance than was anticipated, on account of the locomotive having been disabled from some cause. This unlooked for event gave the little "Native" an opportunity to test her powers fully. Her arrival was announced with long and loud cheers, and many were the praises bestowed upon the enterprising builders. The fact that locomotives could be built in Charleston was thus fully and satisfactorily demonstrated. Messrs. Eason & Dotterer received orders from the

South Carolina Railroad Company to build others. They constructed some eight or nine altogether, each one with the side connection. Among the honored names given to these pioneer locomotives were "Washington" and "Lafayette."

We will now proceed with a brief description of "Easons' Iron Works." They are of capacity to afford employment to upwards of three hundred persons, when in full operation. Every department, from the Finishing Shop to the Foundry, is furnished with tools and appliances of the latest and most costly patterns, for the execution of work of any description, and at short notice. The finishing shop is provided with one of the largest lathes in the Southern States. It is capable of boring a cylinder eighty inches in diameter, and has turned a fly-wheel of fourteen feet diameter, weighing over six thousand pounds.

The Messrs. Eason have devoted considerable attention to the construction of rice mills and rice mill machinery. Their work in this particular line can be seen throughout this State, as well as in Georgia and Louisiana, and in South America, where both their skill and reputation are widely and favorably known.

The Messrs. Eason were mechanics of acknowledged ability and experience, besides, were men of more than ordinary inventive genius, which has been illustrated in many ways in the conduct of their business, and especially in the origin and manufacture of several important machines to facilitate the culture of rice, which must, if its cultivation is to continue as a marketable crop, come into more general use.

It is gratifying to witness the activity daily spreading throughout this old establishment, and we hope, ere long, that every department will be in full operation, affording ample remuneration to its enterprising proprietor, besides giving employment to its full complement of workmen.

Smith & Valk's Machine Shops and Foundry.

Smith & Valk's Machine Shops and Foundry, are located on Hasel street, at the site of what was once known as "Lebby's Machine Shops," under the proprietorship and management of Mr. Wm. Lebby, and afterwards known as "Smith & Porter's Machine Shops." The present proprietors are J. Ralph Smith and C. R. Valk, both able mechanics. Mr. Smith was the senior of the firm of Smith & Porter, and has been conducting business for many years, during which time he has earned an enviable reputation, by strict personal attention to his business. Mr. Valk, whom Mr. Smith has recently associated with him, is a young man of acknowledged mechanical ability, who will yet establish a reputation as wide-spread as that of his seniors in his branch of mechanism.

Several important additions have recently been made to this establishment, rendered necessary by its growing business. Among the additions is a foundry, furnished with all the modern improvements. The finishing shops, and in fact every department, are amply supplied with machinery and tools, to enable the proprietors to undertake any and all varieties of work in their line. At the death of the late Wm. S. Henerey, Mr. Smith purchased all his patterns, which enables them to furnish the agricultural machinery made by Mr. Henerey during his life-time, including the celebrated "McCarthy Cotton Gin."

They have facilities to employ over one hundred workmen, and are receiving a good share of patronage, which, we hope, will be increased, as our city and country increases in prosperity. If their reward is commensurate with their merits, we shall expect to see the establishment of Smith & Valk in its full tide of prosperity at no very distant day.

We have devoted considerable space to the notice of our machine shops, which are the most important part of our mechanical interests. If the three establishments which we have noticed, were in full operation in all their various departments, they would give employment to nearly one thousand workmen, who would contribute to the support of at least five thousand persons annually. Every branch of industry, from the agriculturist down to the shop-keeper, would be benefited thereby. They would all receive a share of the earnings of the thousand workmen thus employed, to a greater or less degree. The good effects of such a state of affairs would permeate every quarter of Charleston, making happy homes where despondency now prevails.

We do not know that we can close more appropriately, than by annexing the views of the writer on the subject of encouragement of home industries and mechanical arts, as published in the Charleston *Courier* in 1868:

Our changed condition makes it absolutely necessary that home industries should be fostered—should be encouraged by every means in the power of our people. The thousands who have been rendered destitute by the late war must be provided with the means of support, which can only be accomplished by turning our attention to the development of home industries, and the erection of workshops in all departments of mechanical science. The workshop in past years has been the school in which some of the most gigantic minds of the age have been trained. Our youth can seek no more honorable place than the workshop. The rapid strides of mechanical arts the past century have been truly wonderful. It affords subject-matter for the contemplation of the human mind, which fills it with wonder and amazement. To what human agency is the world more indebted for the rapid march of civilization than to mechanical science? We answer, none. Ships propelled by steam navigate the waters of every habitable part of the globe. The shrill whistle of the locomotive penetrates far distant lands which but a few years since were the abode of the untutored and the uncivilized. The products of the loom—the snowy fleece of the fields of our once happy and prosperous South—have likewise penetrated the most distant part of the globe, and are fast accustoming the savage to the forms of civilized life. The magnetic telegraph, too, the greatest invention of the eighteenth century, which sets at naught both space and time, is performing a wonderful part in the great work of civilization. All of these are the offsprings of mechanical science. Mechanic art has not yet reached its summit of improvement. Ages will roll on, and each age will wonder at the improvements that are developed.

Captain F. M. Ironmonger, of New York, has discovered and patented a process for the cleaning and bleaching of peanuts, by which, at a slight cost, discolored and mildewed nuts are made clean and bright, thereby ensuring to the owner an increase of from 50 to 75 per cent. in the selling price of his produce.

South Carolina Phosphates and Cotton Seed as Fertilizers.

A correspondent, whose letter is here printed, points out the error into which the New York *World*, and this paper had fallen in discussing the effect of the protective tariff upon the price of manufactured fertilizers. Our contemporary will see by the letter of "S. C.," that the Southern farmer is supplied with fertilizers at a price no higher than is paid by the English farmer, and, beyond this, the Southerner has a vast superiority over all competitors, in his ability to produce, year by year, the ammoniacal material which is required as the basis of the manufactured fertilizer. To this part of the letter we beg to call the particular attention of our New York contemporary.—*Charleston News and Courier.*

To the Editor—Much as I admire the philippics of your contemporary, the New York World, against the "protective tariff swindle," under which New England has managed to misgovern this country for the past forty years, yet zeal will sometimes outrun discretion, and the article quoted in your issue of the 1st instant requires correction on several points, for the errors it contains and the injustice done to our fertilizing companies:

First. It is absurd to say that our South Carolina phosphates can be mined and carried to England, manipulated with sulphuric acid there, then returned and sold here for $20, or half the price at which our fertilizing companies sell the article. The present price paid here for South Carolina phosphate f. o. b., is about $8, currency, per ton of 2,240 pounds; add freight to Europe 35s., or about $9 80, currency per ton, at present rate of exchange, makes the cost to the British manufacturer, without further expenses, which arise for insurance and landing charges, &c, about $17 80, currency, per ton. Not much room there for a profit, if the parties on the other side have to manipulate with acid and return it here for sale at $20 per ton.

Second. There is no duty on sulphur nor on Peruvian guano, which is used to ammoniate our fertilizers. In fact, there is no duty on any article used here by the manufacturers, except on bags, and the outlay on the cost of machinery, &c.; of course, when the increase in price of labor, without the least benefit to the laborer, is caused by the "tariff swindle," this interest suffers like all others.

Now, so far as our planters and farmers are concerned, I am prepared to show that they buy their manure quite as cheap from the importers of Peruvian guanos, and manufacturers, as the British or European farmer. Peruvian guano is quoted in England at present at from $60 to $70, gold, and is sold here at about the same prices. Superphosphate of lime, in England, made simply from ground phosphates and sulphuric acid, is quoted at £4 10s. to £5 10s., or about $25 to $30.

The same article, ammoniated and manipulated, with other ingredients, is quoted at £7 10s. to £8 10s., equal in currency to $42 to $48 per ton.

I now quote the prices of manufacturers of fertilizers in Charleston last season: Superphosphate of lime, $28 to $35, less 10 per cent. discount for cash; ammoniated fertilizer, $48 to $55, less ten per cent. discount for cash.

By these figures you will see that our agricultural friends get their manures as cheap as their brethren elsewhere, and in buying them in Charleston they are always sure of obtaining a pure phosphate, as that article is cheaper here than any substitutes, such as ashes, &c., used in other countries. I will state here another fact showing the great advantage our cotton planters have over every other agricultural community in the world, which is that they annually produce from their cotton crop the ammonia which is so much needed in manures, the seed containing about six per cent. of this invaluable material. Now, suppose a farmer in the up-

country buys only one ton of superphosphate of lime, for which he pays $35, and adds to it one ton of cotton seed, worth on his plantation say $10 per ton, this will furnish two tons of manure at a cost of say $50, which will be enough to use on ten acres, applying four hundred pounds to each acre. From this, with a fair season he will pick ten bales of cotton of four hundred pounds each, and five tons of cotton seed, to be used the following season in the same way as above mentioned, and this process annually repeated will show an amount of reproduction of cotton which will be indeed surprising in extent, and which your readers can figure out for themselves.

If your able contemporary they New York World will give this article a place in that valuable paper, and call the attention of Western farmers, (who have been burning their corn for fuel,) to the immense body of lands in our fine and healthy up-country, the Piedmont of the Carolinas and Georgia, which lie waiting purchasers at from $5 to $10 per acre, which will produce cotton, I will forgive that paper the unintentional injustice it has done the fertilizing companies of this section.

S. C.

Applied Chemistry and Mineralogy.

All communications and notes of inquiry intended for this Department, as well as specimens of soils, fertilizers and minerals for analysis or description, should be addressed to Charles U. Shepard, Jr., M. D., No. 20 Broad street, Charleston, S. C.

Manures.

In conformity with an intention published in the June number of the Rural Carolinian, this department will contain a brief consideration of the more important manures, their action in the soil and utilization by plants. The subject under consideration will be divided, for the sake of convenience, into two heads, viz: domestic and commercial manures, or the fertilizers produced on the farm and those purchased in the market. These articles embracing compiled, as well as original material, are intended to furnish the agriculturist with information of practical importance in the use and acquisition of manures.

The paper on *stable manure* is a translation of Dr. Emil Wolff's article on that subject, in his "Practical Instruction in Manures." The writer has avoided any serious alteration of the original, as it presents the opinions of so eminent an authority in agricultural chemistry, and has endeavored in the necessary curtailment of its length, to preserve its force and spirit.

DOMESTIC MANURES.

Stable Manure.—Dr. Emil Wolff.

Stable manure is everywhere the chief manure, frequently the only fertilizer in agriculture. The few exceptions to this rule in Germany, especially since the increased value of animal products, are deserving of little attention. But in order that the utmost profit may attend both the animal and the vegetable productions of the farm, it becomes necessary that the farmer should bestow special attention not only on the quantity, but the quality of the stable manure produced; and that he should use every expedient to avoid all loss in valuable fertilizing material, and, consequently, a diminution of the fertility of his fields.

1. Stable manure embraces the solid and liquid excretions of the domestic animals and their litter, the latter consisting almost entirely of straw, especially of

the grain crops. The weight of fresh stable manure, containing 25 p. c. anhydrous ingredients and 75 p. c. water, may be easily determined, according to the results of numerous recent and accurate experiments, from the amount of the fodder consumed and that of the straw used as litter. For every 100 parts by weight of anhydrous substance in the fodder, there are found the following quantity in the fresh fæces and urine of the animals:

	Cow.	Ox.	Sheep.	Horse.	Average.
In the fæces	38.0	45.6	46.9	42.0	43.1
In the urine	9.1	5.8	6.6	3.6	6.3
Total parts by weight	47.1	51.4	53.5	45.6	49.4

A difference in the digestibility of the fodder produces, naturally, material fluctuations in these figures; but the fact is established that, on the average, one half of the anhydrous fodder consumed by the ordinary agricultural animals, excepting swine, is found again in their manure. The addition of one-fourth by weight of straw litter, gives 75 lbs. anhydrous stable manure for every 100 lbs. anhydrous fodder. Or 100 lbs. fodder and 25 lbs. straw, (both anhydrous,) yield 75 lbs. *anhydrous*, or 300 lbs. *fresh* stable manure. One thousand lbs. of (different) stabled animals, requiring 24 lbs. fodder and 6 lbs. straw, both anhydrous, produce daily 72 lbs. fresh manure, and per annum 6,570 lbs. dry, or 26,280 lbs. fresh manure. To determine, therefore, the yield of fresh stable manure from stabled animals, *add half the weight of the anhydrous matter in the fodder to the weight of the same in the litter, and multiply the sum by four.*

2. But the value and efficiency of stable manure depend not only on its quantity but also its quality; hence it is necessary to ascertain the form in which the most important ingredients of plant-food occur in manure, whether in a soluble or insoluble condition. Direct experiments have afforded the following results with regard to the organic matter, nitrogen, and the total ashes of fodder:

	Cow.	Ox.	Sheep.	Horse.	Average.
	p. c.	*p. c.*	*p. c.*	*p. c.*	*p. c.*
Organic matter.					
In the fæces	36.5	43.8	45.6	38.2	41.0
In the urine	6.0	3.2	3.9	2.5	3.9
Total	42.5	47.0	49.5	40.7	44.9
Nitrogen.					
In the fæces	45.5	51.0	43.7	56.1	49.1
In the urine	18.3	38.6	51.8	27.3	34.0
Total	63.8	89.6	95.5	83.4	83.1
Fixed ingredients, (ashes.)					
In the fæces	53.9	70.8	63.2	85.6	68.4
In the urine	43.1	40.7	40.3	16.3	35.1
Total	97.0	111.5	103.5	101.9	103.5

According to the above results, for every 100 parts, by weight, of each of the above ingredients in anhydrous fodder, there occur on the average in the fæces and urine of the animals, 44.9 parts of the organic matter, 83.1 parts of the nitrogen, and 103.5 parts of the fixed or mineral matter. These last ingredients, the ashes, always occur to a somewhat excessive amount, owing to their presence in the drink-water, and to the accidental mixture of sand and earth with the fodder. The nitrogen contained in the fodder re-appears nearly entirely in the urine and fæces, if there is no other production, (as meat, milk, wool, etc.,) than the excretions. Of the nitrogen and fixed ingredients contained in the fodder, about one-third are found in the urine. With regard to the latter, it appears that the alkalies re-occur especially in the urine, while almost all the phosphoric acid and lime are found in the fæces.

The following important deductions from what precedes, are worthy of practical attention:

a. The planter should endeavor to retain as much as possible, the exceedingly valuable and fertilizing liquid animal manure.

b. The solid and liquid excretions supplement each other. Both must be restored to the soil impoverished by cultivation; only thus do they constitute a complete manure.

3. The most important requisite for the quality of the stable-manure, is naturally found in the condition of the fodder, under whose influence it is produced. The chemical composition of the fodder actually consumed, and of the material used as litter, constitute everywhere the chief foundation for a rational—*i. e.*, for the only correct, estimation of manure.

The important alimentary substances, which must necessarily be present in the neighborhood of the roots, and hence be continually restored in sufficient quantity to the soil, are known to be potash, lime, magnesia, phosphoric and sulphuric acids, and an appropriate combination of nitrogen. In addition to these, silicic acid may be mentioned, as this ingredient is abstracted in large quantities by the various grass and grain crops, although its function appears to be mechanical, rather than directly productive of vegetable substance.

The average proportion of the indispensable ingredients of plant-food in 1,000 parts of the more important descriptions of fodder, are given in the appendix to Wolff's work. As the same tables have been re-produced in Johnson's "How Crops Grow," Caldwell's "Agricultural Chemistry," and other similar works, they are omitted here for want of space.

From the percentage of plant-food ingredients in the fodder consumed by the stock, the composition, *i. e.*, the quality of the manure must be determined by calculation. This course, though often tedious, is indispensable to a rational practice of husbandry.

It is regretted that a restricted space forbids the publication in full of Dr. Wolff's highly interesting experiments on the production and composition of stable manure. But the following table, giving the results of his experiments with cattle, is introduced in support of what precedes. The first (horizontal) row of figures shows the percentages of the important ingredients of plant-food contained in the manure of

16 full grown, stalled oxen, for a period of 4 months, as obtained by calculation from the carefully ascertained composition of all the fodder and litter used. The second row contains the amounts of the same ingredients, as determined by actual analysis of the manure, in the case of 46 cows and 36 calves confined in stalls for 2½ days. The third row gives the partial composition of the same manure, as calculated from the known composition of the fodder and litter used by the cows and calves.

COMPOSITION OF FRESH STALL MANURE.	Anhydrous Matter.	Ashes, i. e. fixed ingredients.	Nitrogen.	Potash.	Lime.	Magnesia.	Phosphoric Acid.	Sulphuric Acid.	Silicic Acid.
	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c	p. c.	p. c.
1. By calculation from fodder and straw. Experiment with full grown oxen.....	25.0	3.04	0.98	0.65	0.26	0.17	0.44	0.10	1.12
2. By analysis of fresh manure produced by cows and calves.....	25.0	3.49	0.41	0.54	0.41	0.12	0.13	0.08	0.81
3. By calculation from fodder and straw consumed and used by cows and calves.....	25.0	3.19	0.52	0.80	0.27	0.13	0.18	0.10	1.09

From these results it is possible to make the following conclusions:

The stable manure of the oxen would be 2¼ times richer in nitrogen, and 3⅓ in phosphoric acid than that of the cows and calves. This loss may be attributed to a consumption of these ingredients in the production of milk (cows,) and flesh and bone (calves,) in the case of the latter animals; the full-grown oxen having suffered a small increase of weight only. The difference between the results obtained by actual analysis and calculation, amounting to a loss in the former of ¼ of the nitrogen, ⅓ of the potash, and ¼ to ⅓ of the phosphoric acid, may in addition to the reasons before mentioned, be partially due to their loss in some of the urine.

The actual excess of lime in the manure from the cows and calves is undoubtedly due to its prevalence in the water drank by these animals; and the excess of total ashes to the accidental admixture of sand and clay with the food. S.

(*To be continued.*)

The Phosphatic Marls of South Carolina—their Occurrence and Composition.

II. *The Artesian Well at Sineath's Station,* (continued.)

The writer had previously investigated the water reported to have been obtained from the old 22 feet well, and ascertained that the solid ingredients comprised 0.0383 p. c. These consisted, mainly, of bicarbonates of lime and iron, gypsum, organic matter and soluble silica. The amount of lime was 14 p. c. of the residue on evaporation.

The *artesian water*, from the depth of 323 feet, was repeatedly investigated, the following being the average of the writer's analyses:

Specific gravity 1.00049.

Residue on evaporation, 0.067, or 100000 parts water contain 67 parts solid ingredients.

Average Analyses of Residue.

	p. c.
Silicic acid	5.17
Sulphuric acid	4.43
Carbonic acid*	24.25
Phosphoric acid, (traces.)	
Chlorine	10.14
Sodium, (united with chlorine)	6.57
Soda	39.13
Potash	3.54
Lime	1.25
Magnesia, oxide of iron, organic matter, etc., with loss	5.52
	100.00

The above ingredients may be considered as present in the following combinations:

	p. c.
Chloride of sodium	16.71
Sulphate of soda	7.86
Carbonate of soda	52.08
Silicate of soda	10.51
Carbonate of potash	5.19
Carbonate of lime	2.23
	94.58
Undetermined ingredients	5.42
	100.00

It will be observed that over one half of the residue on evaporation, consists of carbonate of soda, and that the remainder is, mainly, chloride of sodium (common salt) and silicate of soda. The presence of 3½ p. c. potash, and the traces of phosphoric acid, are worthy of note.

The samples of the different strata perforated by the artesian tube, which are due to the kindness of Mr. A. de Caradeuc, of the South Carolina Railroad, have been analyzed by the writer's assistant, Dr. W. D. Wamer. These investigations have been executed with great care and a commendable zeal by the latter. The determinations of phosphoric acid have been made by the molybdate of ammonia method, as the safest and most reliable process. The results are the following:

* This does not include that carbonic acid which is expelled during the process of evaporation.

Depth of stratum.	Character of each stratum.	Phosphoric acid.	Equivalent in bone phosphate of lime.	Carbonic acid.	Equivalent in carbonate of lime.	Total lime.	Magnesia.	Sand and Silicia.
ft.		*p. c.*	*p. c.*	*p. c.*	*p. c.*	*p. c.*	*p. c.*	*p. c.*
17 to 20	Clay	0.42	0.92	4.73	10.75	†	†	70.00
26 to 30	Phosphatic nodules	26.79	58.48	4.00	9.09	†	†	4.82
do.	Marl	3.07	6.70	26.46	60.14	39.90	0.75	18.92
34	Marl	3 01	6.57	26.64	60.54	†	†	17.13
46	Argillaceous marl	2.03	4.43	24.55	55.79	41.99	0.99	14.21
70	Phosphatic nodules	22.72	49.59	2,70	6.14	34.02	traces.	27.19
85	Argillaceous marl	1.26	2.74	24.78	56.32	33.76	0.56	21.14
90	Argillaceous marl	1.51	3.30	24.20	55.00	†	†	13.77
104	Phosphatic nodules	13.38	29.20	17.30	39.32	42.08	1.09	12.61
110 to 112	Phosphatic nodules	23.60	51.52	2.53	5.75	35.82	0.25	23.26
do.	Argillaceous marl*	10.65	23.24	19.67	44.70	43.52	traces.	15.04
125 to 128	Phosphatic nodules	15 81	34.51	13.95	31.70	41.82	0.75	15.14
do.	Hard marl	1.23	2.68	14.79	33.61	†	‡	46.14
145	Argillaceous marl	traces.	.....	16.87	38.34	23.76	†	31.50
170	Argillaceous marl	traces.	.....	22.74	51.68	36.59	traces.	24.48
228	Argillaceous marl	traces.	.....	23.54	53.50	†	†	27.32
255	Argillaceous marl	traces.	.....	22.22 21.26	50.50 48.32	35.68 34.86	† 0.37	26.02 27.06
280	Phosphatic pebbles	22.47	49.05	3.80	8.66	35.94	traces.	14.48
286	Argillaceous marl	0.60	1.31	27.63	62.79	40.52	†	18.16
287 to 290	Marl and phosph. grains	5.96	13.01	†	†	27.44	2.95	26.19
300 to 305	Argillaceous marl	3.37	7.37	18.18	41.32	37.35	traces.	16.00
305 to 306	Sandy marl	0.90	1.96	20.23	45.98	30.48	traces.	43.55
307	Sandy marl	0.80	1.75	13.93	31.66	21.99	†	56.17
309 to 311	Hard marl	0.63	1.37	19.39	44.06	30.36	1.05	41.09
312 to 313	Phosphatic pebbles	27.72	60.52	3.85	8.75	43.42	traces.	4.69
do.	Hard pebbly marl	2.47	5.39	12.46	28.32	27.90	traces.	52.28
315 to 316	Sandy limestone	1.02	2.22	21.62	49.13	35.16	traces.	30.81
321 to 322	Firm limestone	0.95	2.07	25.42	57.77	39.23	traces.	25.94
323	Sandy limestone	1.05	2.29	18.00	40.91	27.84	traces.	45.80

A perusal of the above analytical results appears to warrant the following general conclusions as to the composition of the strata perforated by the artesian well:

Phosphate of lime to the amount of fifty p. c., more or less, occurs in layers of larger nodules at the depth of 26, 70, and 110 feet; and in pebbles at 280 and 312 feet; to the amount of thirty p. c. in comparatively large nodules at 104 and 125 feet; of over five p. c. in the upper layers of marl, gradually diminishing in amount with the increasing depth, until present only in traces in the stratum superior to that containing phosphatic pebbles, (280 feet.) At greater depths than 280 feet, the amount of phosphate appears to coincide with the greater or less prevalence of the black, phosphatic grains.

Carbonate of lime varies from thirty to sixty p. c. in the different layers of marl, according to the amount of sand and silica contained in them. Above 125 feet, the quantity of the latter ingredients rarely exceeds twenty p. c.; and with the exception of the stratum of hard, siliceous marl at that depth, does not materially vary from an average of twenty-two p. c., until the pebbly layers are reached.

*Including phosphatic nodules. †Undetermined.

Below 305 feet thin strata of siliceous marl and limestone predominate, with from 40 to 56 p. c. of sand and silica.

Magnesia occurs in traces generally; in a few instances, to the extent of one percentum. The following paragraph from a recent letter of Prof. Charles U. Shepard, Sr., appears opportune in concluding this article:

"The most important geological deduction from this exploration of 323 feet in depth of the great Carolina marl-bed, (eocene,) seems to be this, viz: that the removal by slow solution in the carbonic acid of sea-water of a thickness of from 50 to 100 feet of the bed, would by subsidence of its other constituents give rise to a stratum of nodular phosphate, similar in thickness and character to the one now existing at the surface, and at present wrought in so many places for economical purposes. Whether this was the proximate cause of the origin, we shall, probably, ere long, have the means of determining with greater certainty."

S.

Laboratory for Analytical Chemistry, 20 Broad street, Charleston, S. C.

The Dairy, Farm-Stock and Poultry.

Value of the Jersey Cow for the Dairy.

Col. Waring, in his "Ogden Farm Papers," gives the following figures in proof of the value of the Jersey cow for dairy purposes:

As a perfectly fair specimen of the smaller type of the herd, I will instance the case of "Fora Hinman," a thorough-bred, which weighs now—after dropping her second calf, and when she is three years and four months old—603 lbs. Her first calf was dropped November 10th, 1871, when she was twenty-three months old. The milk did not go into the dairy until December 3d. From that time we carefully weighed all her milk until April 13th, 1873, when she was dried off preparatory to her second calving, (April 23d.) I divide her record into eighteen periods of four weeks each. It stands as follows: 1st, 500½ lbs.; 2d, 419 lbs.; 3d, 346½ lbs.; 4th, 361½ lbs.; 5th, 389½ lbs.; 6th, 331 lbs.; 7th, 309 lbs.; 8th, 330½ lbs.; 9th, 344½ lbs.; 10th, 306 lbs.; 11th, 265½ lbs.; 12th, 232½ lbs.; 13th, 184½ lbs.; 14th, 209½ lbs.; 15th, 170 lbs.; 16th, 181 lbs.; 17th, 216½ lbs.; 18th, 89 lbs. Total in 72 weeks, 5,177½ lbs. This is over eight and a half times her own weight at the end of the period—and, probably, over ten times her weight at its commencement. Taking 2 15-100 lbs. milk as equal to a quart, she gave 2,408 quarts. I am confident that for the average of her milking period, two winters and one summer, 15 lbs. of her milk would make a pound of butter, and that she actually produced between her two calvings 345 lbs. of butter. To apply a more severe test, we will take her yield during the year before her second calving, beginning April 22d, 1872. Her yield was 3,160 lbs. of milk, or (by the above computation) 210⅔ lbs. of butter. She had no extra care, and was never in high condition. No well kept native dairy cow of average size could possibly have been kept on the same fodder; while to yield as much butter in proportion to her weight she must produce over 300 lbs. in her last year, commencing more than five months after dropping her calf, and her first calf at that, and counting the full time to her second calving,

White Leghorns.

Our cut illustrates a pair of these useful and valuable fowls, belonging to Mr. C. A. Pitkin, of Hartford, Ct. Mr. P. has been especially fortunate in breeding fine birds, as his record at the different poultry shows most amply proves. The *Pet Stock and Poultry Bulletin*, says that although the Leghorns are usually esteemed an exclusively American fowl, they really originated in Italy; but to American breeders and fanciers belongs the credit of making them what they now are. Long years ago, we remember seeing these fowls, bred from birds which came direct from Leghorn; and in the main characteristic they were the same as the Leghorns of the present day. But the elegance of form, larger size, increased egg productiveness, hardiness, and purity of breed, are, as we said before, the work of our breeders, and this variety is, perhaps, justly called an American one.

Patrons of Husbandry and Agricultural Societies.

State Grange of South Carolina.

Thomas Taylor, W. M., Columbia; D. Wyatt Aiken, Secretary, Cokesbury; Dr. John A. Barksdale, Lecturer and sole organizing officer for the State, Laurens Court House.

We publish, herewith, a list of the Subordinate Granges of P. of H. in South Carolina, so far as reported to us at the time it was put into print. There are a few blanks which the secretaries of the Granges concerned will greatly oblige us by filling, so that we may perfect the list in a future number. There are also, no doubt, errors in the names of officers, which we shall be glad to have the means of correcting.

Bro. D. Wyatt Aiken, General Deputy, has organized twenty-four Subordinate Granges and a State Grange in North Carolina. A list of these Granges, received from Bro. Aiken, will be published in our next.

A LIST OF SUBORDINATE GRANGES IN SOUTH CAROLINA.

Name of Grange.	*Postoffice.*	*County.*	*Master.*	*Secretary.*
1. Ashley,	Charleston,	Charleston,	A. B. Rose,	Wm. L. Daggett.
2. Maysville,	Maysville,	Sumter,	W. J. Muldrow,	J. H. Cooper.
3. Sumter,	Sumterville,	Sumter,	C. R. F. Baker,	A. White.
4. Cokesbury,	Cokesbury,	Abbeville,	F. A. Connor,	S. E. Graydon.
5. Due West,	Due West,	Abbeville,	Wm. Hood,	J. A. Robinson.
6. Loundsville,	Loundsville,	Abbeville,	R. S. Backham,	Wm. A. Giles.
7. Calhoun,	Calhoun's Mills,	Abbeville,	O. Talman,	J. L. Covin.
8. Long Cane,	Bradley's Mills,	Abbeville,	W. K. Bradley,	J. E. Bradley.
9. Greenwood,	Greenwood,	Abbeville,	A. M. Aiken,	M. W. Coleman.
10. Ninety-Six,	Ninety-Six,	Abbeville,	J. H. Rice,	R. M. Anderson.
11. Clairmount,	Stateburg,	Sumter,	D. B. McLaurin,	R. J. Brownfield.
12. Mar's Bluff,	Mar's Bluff,	Marion,	S. A. Gregg,	Walter Gregg.
13. Darlington,	Darlington C. H.,	Darlington,	E. R. McIver,	J. H. Wilson.
14. Society Hill,	Society Hill,	Darlington,	W. H. Evans,	J. A. Wilson.
15. Cheraw,	Cheraw,	Chesterfield,	Jas. C. Coit,	S. G. Godfrey.
16. Baltimore,	Baltimore,	Marion,	J. C. Sellers,	Willis Fore.
17. Manchester,	Manchester,	Sumter,	F. M. Beckham,	W. O. Cain.
18. Little Rock,	Little Rock,	Marion,	E. T. Stackhouse,	J. Stackhouse.
19. Marion,	Marion C. H.,	Marion,	C. D. Evans,	J. B. White.
20. Centenary,		Marion,	J. B. Young,	E. B. Smith.
21. Aiken,	Bennettsville,	Marlboro',	W. J. Cook,	T. E. Dudley.
22. Saluda,	Cokesbury,	Abbeville,	G. H. Waddell,	W. T. Henderson.
23. Millway,	Millway,	Abbeville,	J. W. Perrin,	W. E. Cothran.
24. Orange,	Orangeburg,	Orangeburg,	W. F. Barton,	M. Glover.
25. Winyah,	Georgetown,	Georgetown,	Benj. Allston,	A. G. Heriot.
26. Fort Motte,	Fort Motte,	Orangeburg,	A. D. Goodwin,	C. T. Goodwin.
27. Pomaria,	Pomaria,	Newberry,	John L. Derrick,	E. J. Lake.
28. Crooked Run,	Winnsboro',	Fairfield,	T. B. McInstry,	R. N. Lawrance.
29. Winnsboro',	Winnsboro',	Fairfield,	J. J. Connor,	G. H. McMaster.
30. Columbia,	Columbia,	Richland,	Wm. Wallace,	W. H. Gibbes.
31.*				
32. Chester,	Chesterville,	Chester,	John Withers,	W. A. Walker.
33. Sandy River,	Chester C. H.,	Chester,	G. Williams,	J. H. Hardin.
34. Fishing Creek,	Smiths' Turn Out,	Chester,	Julius Mills,	R. A. Crawford.
35. Rich Hill,	Chester C. H.,	Chester,	Jno. O. Hardin,	O. A. Wylie.
36. Rock Hill,	Rock Hill,	Chester,	R. M. Sims,	A. H. White.
37. York,	Yorkville,	Chester,		A. F. McConnell.
38. Fort Mill,	Fort Mill,	Chester,	John M. White,	A. B. Springs.
39. Concord,	Sumterville,	Sumter,	W. J. Pringle,	D. W. Durant.
40. Lancaster,	Lancaster C. H.,	Lancaster,	John D. Wylie,	J. A. Hasseltine.
41. Waxhaw,	Waxhaw,	Lancaster,	J. J. Porter,	D. P. Robinson.
42. Gooch,	Lancaster C. H.,	Lancaster,	J. B. Erwin,	John N. Crockett.
43. Wateree,	Camden,	Kershaw,	Wm. M. Shannon,	J. Kershaw.
44. Liberty Hill,	Liberty Hill,	Kershaw,	L. J. Patterson,	W. K. Thomson.
45. Flat Rock,	Flat Rock,	Kershaw	J. J. Trantham,	J. S. Gardner.
46. Frog Level,	Frog Level,	Newberry,	A. H. Wheeler,	S. J. Hiller.
47. St. George's,	St. George's,	Colleton,	—— Moorer,	T. H. Abbott.
48. Robert Swamp,	Graham's,	Orangeburg,	Ira T. Shoemaker,	T. B. Boyd.
49. Cross Hill,	Cross Hill,	Laurens,	J. Wash. Watts,	J. C. Cook.
50. Laurens,	Laurens C. H.,	Laurens,	Jno. A. Barksdale,	Z. W. Holmes.
51. Clinton,	Clinton,	Laurens,	R. S. Griffen,	W. B. Bell.
52. Tumb'g Shoals,	Tumbling Shoals,	Laurens,	T. R. L. Wood,	W. D. Sullivan.
53. Beth Eden,	Newberry C. H.,	Newberry,	H. H. Folk,	J. P. Kinard.
54. Belmont,	Newberry C. H.,	Newberry,	L. E. Folk,	H. D. Boozer.
55. Silver Street,	Silver Street,	Newberry,	J. B. West,	J. W. L. Spearman.
56. New Chappell,	Newberry C. H.,	Newberry,	Frank Moon,	M. J. Boyd.
57. Barnwell,	Barnwell,	Barnwell,	Wm. A. Martin,	W. M. Hunter.
58. Allendale,	Allendale,	Barnwell,	J. W. Ogilvie,	J. S. Stoney.
59. Buford's Bridge,	Bamberg,	Barnwell,	G. W. Moye,	L. Ayre.
60. Spring Town,	Bamberg,	Barnwell,	E. H. Dowling,	W. B. Rice.
61. Edgefield,	Edgefield C. H.,	Edgefield,	Z. W. Carwile,	M. W. Abney.
62. Meeting Street,	Meeting Street,	Edgefield,	W. L. Stephens,	Alvin Hart.

* Through an error in the Secretary's Office, at Washington, there is no Grange with this number.

Name of Grange.	*Postoffice.*	*County.*	*Master.*	*Secretary.*
63. Hampton,	Ridge Spring,	Edgefield,	P. J. Quattlebaum,	John Kennerly.
64. Fork,	Columbia,	Lexington,	A. D. Haltiwanger,	J. L. Shuler.
65. Plowden's Mill	Manning,	Clarendon,	A. J. Tendall,	J. N. Hodge.
66. Monticello,	Monticello,	Fairfield,	J. K. Davis,	H. M. Zealy.
67. Spartanburg,	Spartanburg,	Spartanburg,	Louis P. Jones,	A. H. Kirby.
68. Tyger River,	Spartanburg C. H.,	Spartanburg,	W. J. Miller,	M. B. Harrison.
69. Williston,	Williston,	Barnwell,	—— Brown,	J. M. Hair.
70. Greenville,	Greenville C. H.,	Greenville,	Alex. McBee,	W. A. McDaniel.
71. Anderson,	Anderson C. H.,	Anderson,	J. P. Reed,	J. A. Hoyt.
72. Abbeville,	Abbeville C. H.	Abbeville,	J. F. C. Dupré,	T. P. Quarles.
73. Cooper Swamp,	Midway,	Orangeburg,	Benj. Pooser,	S. T. Islar.
74. Branchville,	Branchville,	Orangeburg,	O. H. Ott,	M. S. Fressett.
75. Graham's,	Graham's,	Barnwell,	C. C. Faust,	A. A. Faust.
76. Indiantown,	Kingstree,	Williams'g,	Jas. McCutchen,	W D. Knox.
77. Glen Springs,	Glen Springs,	Spartanburg,	W. J. T. Glenn,	W. P. Smith.
78. Union,	Unionville,	Union,	A. W. Thomson,	J. L. Young.
79. Fairforest,	Fairforest,	Union,	Jasper Gibbes,	D. Johnson.
80. Meador,	Unionville,	Union,	Robt. C. Farr,	S. Crosby.
81. Liberty Hall,	Liberty Hill,	Newberry,	J. W. Anderson,	Thos. Duckett.
82. Bishopville,	Bishopville,	Sumter,	Wm. P. Baskin,	W. A. James.
83. Mechanicsville	Mechanicsville,	Sumter,	T. H. Dick,	E. J. Holman.
84. Clarendon,	Manning,	Clarendon,	W. R. Coskree,	Jas. E. Davis.
85. Manning,	Manning,	Clarendon,	B. P. Barron,	W. J. Clark.
86. Summerton,	Wright's Bluff,	Clarendon,	H. L. Benbow,	R. K. Rutledge.
87. Calvary,	Sumter,	Clarendon,	John H. Furman,	W. S. Manning.
88. Bethel,	Newberry,	Newberry,	J. K. G. Nance,	F. W. Higgins.
89. Santee,	Santee,	Union,	James Thomas,	D. A. Thomas.
90. Cane Creek,	Santee,	Union,	F. Hobson,	P. P. Butler.
91. Caw Caw,	Orangeburg,	Orangeburg,	T. J. P. Walsh,	O. B. Riley.
92. Bethesda,	McConnelsville,	York,	C. S. Wilson,	Alfred Moore.
93. Cross Keys,	Cross Keys,	Union,	D. H. Sheldon,	W. H. Norman.
94. Fullerton,	Sumter,	Sumter,	P. P. Gaillard,	H. G. McLeod.
95. Ridgeway,	Ridgeway,	Fairfield,	John Boyd,	Jas. Q. Davis.
96. Hopewell,	Branchville,	Colleton,	Jas. G. Padgett,	J. P. Carter.
97. Three Mile,	Midway,	Barnwell,	J. C. McMillen,	C. R. Clayton.
98. Centreville,	Walterboro',	Colleton,	A. L. Campbell,	D. A. Hanwood.
99. Pine Ridge,	Pine Ridge.	Lexington,	T. W. Derrick,	H. C. Baugn.
100. Gladn's Grove,	Rocky Mount,	Fairfield,	J. C. Caldwell,	J. G. Johnston.
101. Bull Run,	Chester,	Chester,	R. T. Mockby,	J A. Reedy.
102. Jalapa,	Newberry,	Newberry,	S. G. Welsh,	
103. Palmetto,	Palmetto,	Darlington,	B. F. Williamson,	E. R. McIver.
104. Hartsville,	Hartsville,	Darlington,	J. A. Law,	E. W. Cannon.
105. Up'r Richland,	Columbia,	Richland,	John H. Kinsler,	J. F. D. Lever.
106. Landsford,	Landsford,	Chester,	C. W. McFadden,	J. J. Jordan.
107. Blackstocks,	Blackstocks,	Chester,	W. Roseborough,	Jas. F. Barber.
108. Roselands,	Dorn's Mills,	Edgefield,	J. H. Brooks,	C. M. May.
109. Beech Island,	Augusta, Ga.,	Aiken,	Dr. H. R. Cook,	W. H. Atkinson.
110. Acton,	Acton,	Richland,	Warren Adams,	A. G. Clarkson.
111. Odell,	Whitmier's,	Newberry,	R. P. Briggs,	J. W. Hill.
112. Sal. Old Town,	Saluda Old Town,	Edgefield,	M. W. Clary,	S. A. Crawford.
113.				
114. Tylerville,	Tylerville,	Laurens,	S. J. Craig,	John R. Pitts.
115. Providence,	Vance's Ferry,	Orangeburg,	D. K. Norris,	T. W. Dantzler.
116. S. Cross Roads	Branchville,	Colleton,	Jasper M. Smith,	E. F. Warren.
117. Middle Pen,	Orangeburg,	Orangeburg,	H.L.Rickenbacker	F. H. Gramling.
118. Carmer Hill,	Chester,	Chester,	Harper Carter,	F. T. Cassels.
119. Gowdeyville,	Gowdeyville,	Union,	M. S. Lynn,	W. L. Goudelock.
120. Goshen Hill,	Goshen Hill,	Union,	Geo. Douglass,	Geo. Douglass, Jr.
121. Wallace,	Pleasant Mound,	Laurens,	A. W. Burnside,	W. D. Barksdale.
122. Bethel,	Woodruff's,	Spartanburg,	E. S. Allen,	A. B. Woodruff.
123. Aiken,	Aiken,	Aiken,		
124. Washington,	St. Matthew's,	Orangeburg,	J. A. Keller,	L. R. Beckwith.
125. White Cane,	St. Matthew's,	Orangeburg,	W. J. Snider,	J. W. Smith.
126. Graham,	Myersville,	Williamsb'g,	N. M. Graham,	J. F. Jones.
127. Black River,	Kingstree,	Williamsb'g,	S. A. Burgess,	W. H. McElveen.

Miscellaneous Correspondence and Notices.

Notes on the July Number.

Editor of the Rural Carolinian: The July number with its uniform punctuality is upon our table, and we feel inclined to indulge in a chat about its contents.

"*Ploughing and its Effect upon Soils.*"—Dr. Furman has given us a very sensible paper on a very important subject. But while every body will agree with him, most persons will say how can we do it? It is very difficult to get work done at all, much less thoroughly and well done.

"*Biscayne Bay and its Surroundings.*"—Mr. Whitner has almost persuaded us to go in search of tropical luxuries; we have been dreaming of oranges, lemons, cocoa-nuts, bananas, fish and fowl, but shall wait to hear, per contra, of the snakes, sand-flies, mosquitoes, gallinippers, alligators and agues, before we make up our mind on the subject.

"*Lime and Charcoal.*—You can scarcely ride a mile in any direction without seeing old coal pits and ash banks, but the idea of any virtue being in them, we would never have the temerity to advance.

"*Cultivation by Steam in Louisiana.*"—This is doing the business on a grand scale—what one might call "high farming"—a little higher than most people could afford to venture, twenty-six inches deep and ten acres per diem. We call that "running the thing into the ground."

"*Cabbage Lice.*"—"Experience is a dear school," is an old adage. We read this salt prescription, as coming from a very trustworthy source, and tried it on a few rows of very fine cabbage. Well, they are dead—the first rain or big dew dissolved the salt, and the bud died, that's all.

"*Sheep Husbandry in the South*"—A few nights ago those interesting animals, the dogs, got on a rampage and cleaned out a neighbor's flock in short order. There is no use talking about sheep husbandry, as long as dogs and mutton lovers are so abundant; and, we might add, cotton is king.

"*The Phosphatic Rocks and Marls of South Carolina.*"—A very interesting paper from Dr. Shepard. As far as our observation goes this year, the phosphatic manures of our State exhibit a marked effect upon the cotton. We predict, however, dissatisfaction extensively this year. There has been too much rain, and the grass has been very aggressive and uncompromising.

"*Corn Insects, No. III.*—Mr. Dodge (in our opinion) has overlooked the most serious enemy to corn we have. On all stubble lands, and especially lands which have been at rest and have grown up in iron weed, there is a little worm commonly called the bud-worm, which cuts out the bud of the young corn. They are always worse in cold wet springs, and on heavy clays, ("crawfish" soils.) The only way of escaping their ravages we have found, is to plant very early, or very late. It is the opinion of some, that the bud-worm is the grub of a fly which lays its egg upon the leaf of the young plant; when it is hatched it eats its way down and cuts out at the bottom. We have walked a row from one end to the other pulling up every plant killed by the bud-worm, and in walking back found others wilted, ready to die. We have examined hundreds of stalks and traced the course of the worm downward, and very rarely *found* a worm. Will Mr. Dodge "rise to explain?" We would like to know a little more of this fellow. He has been excessively troublesome this year. We have replanted our field four times.

"*Manufactures at Homes.*"—Col. Aiken has a way of prying into other people's enclosures that is very interesting. We have enjoyed his introduction into the big

tin shop. The Proprietor must be a Grand Duc. It is a very gratifying evidence of thrift and improvement, to see those lesser industries springing up in our cities. It will give employment, wholesome and profitable, to many who are sadly in want of it. Idleness is the Devil's work shop. There would be less dirty work for the police courts and the lawyers, and fewer disgusting scenes for the reporters, if the idle vagabonds and loafers of our cities could be put to some useful employment.

"*McKinlay's Portable Rice Mill.*"—Such men as Mr. McKinlay belong to that class of public benefactors, who rarely receive their just reward.

"*The Missouri State Grange.*"—Col. Aiken has been taking the measure of our Western Grangers. The Order is assuming startling proportions, and the old hunker politician, monopolist and grabber are growing uneasy. Well, there is one comfort,—we can't make things worse, and we may make them better.

We have introduced an interesting feature into our Granges. The members bring to the meetings any fine specimens of fruits, vegetables, etc., that we may compare and exchange.

During the month of June, we have had too much rain—heavy freshets on the water-courses,—never saw a worse prospect for "bottom" corn. The upland corn, where it has been well cultivated, looks well. Cotton has suffered from an excess of rain and a terrible grass pressure, to say nothing of the scarcity and inefficiency of labor. Now, 1st July, not a bloom, and a great many acres can never be cleared. The wheat crop is almost a total failure. Very few will get more than their seed, and what is remarkable, the wheat sown in January, and ploughed in with a turn-plough, is best. Oats tolerably good—winter sown, too thin—frozen out;—spring sown, too low, and hard to save. Fruit, none, save plums and blackberries, and a few pears and apples. Apple and pear trees dying of blight. Country healthy, barring diarrhæa, which seems to be growing epidemic. Corn cribs empty, mules in bad condition, and grass luxuriant.

* * *

Inquiries and Answers.

D. R. H., Harroll's Store, N. C. What you call "big root," in cabbages is, we presume, what is generally known as "club-foot." A dressing of lime and salt applied to the soil may remedy the disease. For the cabbage worm, we have published a number of remedies, and have not space at command, at this time, to repeat them. Look over back numbers. Our own plan, with the few we grow in our garden, is to pull off a lower leaf of the cabbage, late in the afternoon, and lay it carefully on the top of the plant The next morning we find most of the worms on the underside of this leaf, and can easily destroy them. This must be repeated as often as is necessary. Salt is a good remedy, but if you put on a little too much, you will, like a correspondent who narrates his experience on another page, kill the cabbages as well as the worms. A little can be used with decided advantage to the plants. 3. We cannot tell you who has cranberry plants for sale. Perhaps, however, Jas. J. H. Gregory, Marblehead, Mass., might supply you.

———Z. H. S., Mellonville, Fla. In the absence of both personal experience and the recorded experience of others (and we suppose there has been little experience to record), in your region of country, we cannot answer your queries in so definite and positive a way as we could desire. Among the apples which it would be safe to try, as they succeed generally in the lower South, are Red Astrachan, Early Harvest, Horse, Red June, Sweet Bough, Shockley and Equintely;

2. Pears will be likely to succeed on good, strong soil, and Quinces on low moist ground; 3. Cherries, Currants and Gooseberries do not, as a general rule, succeed in the South; 4. Asparagus is at home everywhere in the Southern States, and grows finely; 5. Rhubarb is difficult to carry through the summer, but it can be grown by getting new roots every fall from the North, and planting on very deep, rich, well prepared soil; 6. Probably you could get olive trees from Col. Hardee, of Honey-moon Nurseries, Jacksonville, Fla.

———The "Texas Grass," sent by R. W., Edgefield County, S. C., was submitted to Mr. H. W. Ravenel, who informs us that it is *Phalaris intermedia*, sometimes called Canary grass, though the true Canary grass is *Phalaris Canariensis*. The *P. intermedia* is found mostly along the coast from North Carolina to Texas, and is the same as *P. Americana* of Elliott's "Sketches."

———"A Young Farmer" wants to know if it will pay to turn under stubble, on land which is sown every other year, and if so with what kind of a plough, how deep, and at what time of the year, or if it would better (as some think) to leave it on the surface of the ground. He asks some experienced farmer to reply.

———L. C. desires to know what is the working law as to the length of the shaft on which a driving pully is placed, as on one of those iron horse-powers where the shaft runs under and beyond the horse's tread.

———Mrs. M. P. P. For Bronze Turkeys, address Mr. Wm. G. Mood, Jr., corner of Meeting and Market streets, Charleston, S. C.

General Notices and Acknowledgments.

"The Strawberry Girl," is the name of the beautiful Chromo given for every subscriber to *Hearth and Home*, (New York, Orange, Judd & Co., $3 a year,) and the same publishers send out with their well known *American Agriculturist*, ($1.50 a year,) a copy in chromo of Reinhardt's fine painting, "Mischief Brewing." They will please accept our thanks for copies of these fine pictures.

From the Pennsylvania Agricultural Works, York, Pa., we have received a Minter Cultivator, which is manufactured there, (Adger & Co., Charleston, Agents.) Mr. Minter's implement is "winning golden opinions" among our planters, and we hope Mr. Minter and the manufacturers will win, if not golden dollars, at least a fair share of greenbacks, as a result, for the Cultivator is undoubtedly a good one.

Several interesting articles are necessarily laid over for the next number for want of room in the present issue; and among the rest, "Drainage and Health," (for which Saluda Grange, No. 22, will please accept our thanks); "Breeds of Bees—Italianizing," by Dr. J. P. H. Brown; "Labor-saving Implement," by "An Old Farmer;" "Our Native Flora," by H. W. Ravenel, and a number of brief communications of various subjects.

Literature, Science and Home Interests.

FONS FABULOSUS.

I.

The gnarlèd oaks their mystic shadows threw
Across the fount enchanted,
While over all the forest dark and drear
The evening sunlight slanted;

II.

The wild vines hung from all the mighty trees,
Like serpents interlacing,
The murky waters of the pool below
Their forms fantastic tracing;

III.

The owl's weird note came on the fitful breeze,
Like some lost spirit's wailing;
Ill-omened birds swept by on shadowy wing,
The birth of darkness hailing.

IV.

Of all the gallant band DeLeon led
Across the sounding ocean,
But one beside the fountain's grassy brink,
Stood full of strange emotion.

V.

One draught, and he would be a youth again,
Lord of a life unending;
His steps no more through all the changing years
To death's dark portals tending.

VI.

For, as a vision from the dreamer's mind
Flies swift as dawn is breaking,
So at one draught, the past would wane and fade,
Its flight forever taking.

VII.

He stood, while like a vivid, changeful dream,
The dead years swept before him,
And checkered pictures full of good and ill
The Wizard memory bore him.

VIII.

Once more a child he saw his village street,
His father's humble dwelling,
And heard, upon the balmy evening air,
The organ's wondrous swelling,

IX.

Float from the gray Cathedral where the monks
Their vesper hymns were singing,
And from the sunny mountains clear and sweet
The distant sheep bells ringing:

X.

He heard once more his mother's even song,
Her babe to slumber hushing;
And ever faster came the thoughts of home
Across his lone heart rushing:

XI.

Again he met his darling as of old,
Beside the river sweeping,
She who had been, for many a year, beneath
Castilian meadows sleeping.

XII.

All griefs were softened by the hand of time,
All pains by distance lightened;
And eyes long since in quiet slumber closed
The magic picture brightened.

XIII.

Ah, me! how sweet his childhood seemed to him,
A man with labor weary,
And as the shadows dark and darker grew,
The forest seemed more dreary.

XIV.

Could he forget the love of by-gone days,
The hopes that youth had cherished;
Hopes that, like flowers, the birth of early spring
'Mid age's snows had perished?

XV.

What was life worth, if it to him could bring
No memories deep and tender,
Of those fair days when all the sky was bright
With morning sunshine's splendor?

XVI.

For one short night he thought to dream of home,
And on the joyful morrow,
New strength and courage for the coming years,
From that strange fount to borrow.

XVII.

Weary from marching thro' the forest wild,
With want and toil o'erpowered;
He sank to sleep just as the stars came out,
And night and darkness lowered.

XVIII.

The mystic shadows from the fountain fled
As "jocund day" was breaking;
But peacefully the wayworn soldier slept—
His was a brighter waking. STRIX.

Charleston, S. C., Feb. 7th, 1872.

A STORY OF MYSELF.

PART I.

"What have I got that you would like to have? Your letters are tied up and directed to you. Mother will give them to you, when she finds them in my desk. I could execute my last will myself, if it were not for giving her additional pain. I will leave everything for her to do except this; take these letters, and when I am dead give them to Frank. There is not a reproach in them, and they are full of wit; but he won't laugh when he reads them again. Choose now, what will you have of mine?"

"Well," I said, "give me the gold penholder that Redmond sent you after he went away."

Laura rose up in her bed, and seized me by my shoulder, and shook me, crying between her teeth, "You love him! you love him!" Then she fell back on her pillow. "Oh, if he were here now! He went, I say, to marry the woman he was engaged to before he saw you. He was nearly mad though when he went. The night mother gave them their last party, when you wore your black lace dress, and had pink roses in your hair, somehow I hardly knew you that night. I was in the little parlor, looking at the flowers on the mantelpiece, when Redmond came into the room, and, rushing up to me, bent down and whispered, 'Did you see her go? I shall see her no more; she is walking on the beach with Maurice.' He sighed so loud that I felt embarrassed; for I was afraid that Harry Lothrop, who was laughing and talking in a corner with two or three men, would hear him; but he was not aware that they were there. I did not know what to do, unless I ridiculed him. 'Follow them,' I said. 'Step on her flounces, and Maurice will have a chance to humiliate you with some of his cutting, exquisite politeness.' He never answered a word, and I would not look at him, but presently I understood that there were tears falling. Oh, you need not look towards me with such longing; he does not cry for you now. They seemed to bring him to his senses. He stamped his foot; but the carpet was thick; it only made a thud. Then he buttoned his coat, giving himself a violent twist as he did it, and looked at me with such a haughty composure, that, if I had been you, I should have trembled in my shoes. He walked across the room toward the group of men. 'Ah, Harry,' he said, 'where is Maurice?' 'Don't you know?' they all cried out; 'he has gone as Miss Denham's escort?' 'By Jove!' said Harry Lothrop—'Miss Denham was as handsome as Cleopatra, to-night. Little Maurice is now singing to her. Did he take his guitar under his arm? It was here; for I saw a green bag near his hat when we came in to-night.' Just then we heard the twang of a guitar under the window, and Redmond, in spite of himself, could not help a grimace. Is it not a droll world?" said Laura, after a pause; "things come about so contrariwise."

She laughed such a shrill laugh, that I shuddered to hear it, and I fell a-crying.

"But," she continued, "I am going, I trust, where a key will be given me for this cipher."

Tears came into her eyes, and an expression of gentleness filled her face.

"It is strange," she said, "when I know that I must die, that I should be so moved by earthly speculations. My heart supplicates God for peace and patience, and at the same moment my thoughts float away in dreams of the past. I shall soon be wiser; I am convinced of that. The doctrine of compensation extends beyond this world; if it be not so, why should I die at twenty, with all this mysterious suffering of soul? You must not wonder over me, when I am gone, and ask yourself, 'Why did she live?' Believe that I shall know why I lived, and let it suffice you, and encourage you to go on bravely. Live and make your powers felt. Your nature is affluent, and you may yet learn how to be happy."

She sighed softly, and turned her face to the wall, and moved her fingers as sick people do. She waited for me to cease weeping: my tears rained over my face so that I could neither see nor speak.

After I had become calmer, she moved toward me again and took my hand; her own trembled.

"It is for the last time, Margaret. My good, skillful father gives me no medicine now. My sisters have come home; they sit about the house like mourners, with idle hands, and do not speak with each other. It is terrible, but it will soon be over."

She pulled at my hand for me to rise. I staggered up, and met her eyes. Mine were dry now.

"Do not come here again. It will be enough for my family to look at my coffin. I feel better to think you will be spared the pain."

I nodded.

"Good-bye."

A sob broke in her throat.

"Margaret"—she spoke like a little child—"I am going to Heaven."

I kissed her, but I was blind and dumb. I lifted her half out of the bed. She clasped her frail arms around me, and hid her face in my bosom.

"Oh, I love you!" she said.

Her heart gave such a violent plunge, that I felt it, and laid her back quickly. She waved her hand to me with a determined smile. I reached the door, still looking at her, crossed the dark threshold, and passed out of the house. The bold sunshine smote my face, and the insolent wind played about

me. The whole earth was as brilliant and joyous as if it never had been furrowed by graves.

Laura lived some days after my interview with her. She sent me no message, and I did not go to see her. From the garret-windows of our house, which was half a mile distant from Laura's, I could see the windows of the room where she was lying. Three tall poplar trees intervened in the landscape. I thought they stood motionless so that they might not intercept my view while I watched the house of death. One morning I saw that the blinds had been thrown back and the windows opened. I knew then that Laura was dead.

The day after the funeral I gave Frank his letters, his miniature, and the locket which held a ring of his hair.

"Is there a fire?" he asked, when I gave them to him; "I want to burn these things."

I went to another room with him.

"I'll leave everything here to-day; and may I never see this place again! Did she die, do you know, because I held her promise that she would be my wife?"

He threw the papers into the grate, and crowded them down with his boot, and watched them till the last blackened flake disappeared. He then took from his neck a hair chain, and threw that into the fire also.

"It is all done now," he said.

He shook my hand with a firm grasp and left me.

A month later Laura's mother sent me a package containing two bundles of letters. It startled me to see that the direction was dated before she was taken ill:—"To be given to Margaret in case of my death. June 5th, 1848." They were my letters, and those which she had received from Harry Lothrop. On this envelope was written, "put these into the black box he gave you." The gold penholder came into my hands also. *Departure* was engraved on the handle, and Laura's initials were cut in an emerald in its top. The black box was an ebony, gold-plated toy, which Harry Lothrop had given me at the same time Redmond gave Laura the penholder. It was when they went away, after a whole summer's visit in our little town, the year before. I locked the letters in the black box, and,

"Whether from reason or from impulse only,"

I know not, but I was prompted to write a line to Harry Lothrop.

"Do not," I said, "write Laura any more letters. Those you have already written to her are in my keeping, for she is dead. Was it not a pleasant summer we passed together? The second autumn is already at hand; time flies the same, whether we are dull or gay. For all this period what remains except the poor harvest of a few letters?"

I received in answer an incoherent and agitated letter. What was the matter with Laura? he asked. He had not heard from her for months. Had any rupture occurred between her and her friend Frank? Did I suppose she was ever unhappy?—He was shocked at the news, and said he must come and learn the particulars of the event. He thanked me for my note, and begged me to believe how sincere was his friendship for my poor friend.

"Redmond," he continued, "is, for the present, attached to the engineer corps to which I belong, and he has offered to take charge of my business while I am a day or two absent. He is in my room at this moment, holding your note in his hand, and appears painfully disturbed."

It was now a little past the time of year when Redmond and Harry Lothrop had left us—early autumn. After their departure, Laura and I had been sentimental enough to talk over the events of their visit. Recalling the associations, we created an illusion of pleasure which of course could not last. Harry Lothrop wrote to Laura, but the correspondence declined and died. As time passed on, we talked less of our visitors, and finally ceased to speak of them. Neither of us knew or suspected the other of any deep or lasting feeling toward the two friends. Laura knew Redmond better than I did; at least she saw him oftener: in fact, she knew them both in a different way. They had visited her alone; while I had met them almost entirely in society. I never found so much time to spare as she seemed to have; for everybody liked her, and everybody sought her. As often as we had talked over our acquaintance, she was weary of speaking of Redmond. Her last conversation with me revealed her thoughts, and awakened feelings which I thought I had buffeted down. The tone of Harry Lothrop's note perplexed me, and I found myself drifting back into an old state of mind I had reason to dread.

As I said, the autumn had come round. Its quiet days, its sombre nights, filled my soul with melancholy. The lonesome moan of the sea, and the waiting stillness of the woods were just the same a year ago; but Laura was dead, and Nature grieved me. Yet none of us are in one mood long, and at this very time there were intervals when I found something delicious in life, either in myself or the atmosphere.

"Moreover, something is or seems
That touches me with mystic gleams."

A golden morning, a starry night, the azure round of the sky, the undulating horizon of the sea, the blue haze which rose and fell over the distant hills, the freshness of youth, the power of beauty—all gave me deep voluptuous dreams.

I can afford to confess that I possessed beauty; for half my faults and miseries arose from the fact of my being beautiful. I was not vain, but as conscious of my beauty as I

was of that of a flower, and sometimes it intoxicated me. For, in spite of the comforting novels of the Jane Eyre school, it is hardly possible to set an undue value upon beauty; it defies ennui.

As I expected, Harry Lothrop came to see me. The sad remembrance of Laura's death prevented any ceremony between us; we met as old acquaintances, of course, although we had never conversed together half an hour without interruption. I began with the theme of Laura's illness and death, and the relation which she held toward us. All at once I discovered, without evidence, that he was indifferent to what I was saying; but I talked on mechanically, and like a phantasm the truth came to my mind. The real man was there,—not the one I had carelessly looked at and known through Laura.

I became silent.

He twisted his fingers in the fringe of my scarf, which had fallen off, and I watched them.

"Why," I abruptly asked, "have I not known you before?"

He let go the fringe, and folded his hands, and in a dreamy voice replied,—

"Redmond admires you."

"What a pity!" I said. "And you,—you admire me, or yourself, just now; which?"

He flushed slightly, but continued with a bland voice, which irritated and interested me.

"All that time I was so near you, and you scarcely saw me; what a chance I had to study you! Your friend was intelligent and sympathetic, so we struck a league of friendship; I could dare so much with her, because I knew that she was engaged to Mr. Ballard. I own that I have been troubled about her since I went away. How odd it is that I am here alone with you in this room! how many times I have wished it! I like you best here; and while absent, the remembrance of it has been inseparable from the remembrance of you,—a picture within a picture. I know all that the room contains,—the white vases and the wire baskets, with pots of Egyptian lilies and damask roses, the books bound in green and gold, the engravings of nymphs and fauns, the crimson bars in the carpet, the flowers on the cushions, and, best of all, the arched window and its low seat. But I had promised myself never to see you; it was all I could do for Laura. She is dead, and I am here."

I rose and walked to the window, and looked out on the misty sea, and felt strangely.

"Another lover," I thought,—"and Redmond's friend, and Laura's. But it all belongs to the comedy we play."

He came to where I stood.

"I know you so well," he said,—"your pride, your self-control, even your foibles; but they attract one, too. You did not escape heart-whole from Redmond's influence. He is not married yet, but he will be; he is a chivalrous fellow. It was a desperate matter between you two—a hand-to-hand struggle. It is over with you both, I believe; you are something alike. Now may I offer you my friendship? If I love you, let me say so. Do not resist me. I appeal to the spirit of coquetry which tempted you before you saw me to-night. You are dressed to please me."

I was thinking what I should say, when he skilfully turned the conversation into an ordinary channel. He shook off his old dreamy manner, and talked with his old vivacity. I was charmed a little; an association added to the charm, I fancy. It was a little late at night when he took his leave. He had arranged it all; for a man brought his carriage to the door and drove him to the next town, where he had procured it to come over from the railway.

When I was shut in my room for the night, rage took possession of me. I tore off my dress, twisted my hair with vehemence, and hurried to bed and tried to go to sleep, but could not, of course. As when we press our eyelids together for meditation or sleep, violet rings and changing rays of light flash and fade before the darkened eyeballs, so in the dark unrest of my mind the past flashed up and this is what I saw:—

The country ball, where Laura and I first met Redmond, Harry Lothrop and Maurice. We were struggling through the crowd of girls at the dressing room door to rejoin Frank, who was waiting for us. As we passed out, satisfied with the mutual inspection of our dresses of white silk, which were trimmed with bunches of rose-geranium, we saw a group of strangers close by us buttoning their gloves, looking at their boots and comparing looks. Laura pushed her fan against my arm; we looked at each other, and made signs behind Frank, and were caught in the act, not only by him, but by a tall gentleman in the group which she had signalled me to notice. The shadow of a smile was traveling over his face as I caught his eye, but he turned away so suddenly that I had no opportunity for embarrassment. An usher gave us a place near the band, at the head of the hall.

"Do not be reckless, Laura," I said—"at least till the music gives you an excuse."

"You are obliged to me, you know," she answered, "for directing your attention to such attractive prey. Being in bonds myself, I can only use my eyes for you; don't be ungrateful."

The band struck up a crashing polka, and she and Frank whirled away, with a hundred others. I found a seat and amused myself by contrasting the imperturbable countenances of the musicians with those of the dancers. The perfumes the women wore floated by me. These odors, the rymthic motion of the dancers, and the hard, energetic music, exhila-

rated me. The music ended, and the crowd began to buzz. The loud, inarticulate speech of a brilliant crowd is like good wine. As my acquaintance gathered about me, I began to feel its electricity and grew blithe and vivacious. Presently I saw one of the ushers speaking to Frank, who went down the hall with him.

"Oh, my prophetic soul!" said Laura, "they are coming."

Frank came back with the three and introduced them. Redmond asked me for the first quadrille, and Harry Lothrop engaged Laura. Frank said to me behind his handkerchief, "It's *en regle;* I know where they came from; their fathers are brave, and their mothers are virtuous."

The quadrille had not commenced, so I talked with several persons near; but felt a constraint, for I knew I was closely observed by the stranger, who was entirely quiet. Curiosity made me impatient for the dance to begin; and when we took our places, I was cool enough to examine him. Tall, slender and swarthy, with a delicate moustache over a pair of thin scarlet lips, penetrating eyes and a tranquil air. My antipodes in looks, for I was short and fair; my hair was straight and black like his, but my eyes were blue and my mouth wide and full.

"What an unnaturally pleasant thing a ball-room is!" he said, "before the dust rises and the lights flare, I mean. But nobody ever leaves early; as the freshness vanishes, the extravagance deepens. Did you ever notice how much faster the musicians play as it grows late? When we open the windows, the fresh breath of the night increases the delirium within. I have seen the quietest women toss their faded bouquets out of the windows without a thought of making a comparison between the flowers and themselves."

"My poor geraniums!" I said, "what eloquence!"

He laughed, and answered—

"My friend Maurice yonder would have said it twice as well."

We were in the promenade then, and stopped where the said Maurice was fanning himself against the wall.

"May I venture to ask you for a waltz, Miss Denham? it is the next dance on the card," said Maurice; but of course you are engaged."

I gave him my card, and he began to mark it, when Redmond took it, and placed his own initials against the dance after supper, and the last one on the list. He left me then, and I saw him a moment after talking with Laura.

We passed a gay night. When Laura and I equipped for our ten miles ride, it was four in the morning. Redmond helped Frank to pack us in the carriage, and we rewarded him with a knot of faded leaves.

"This late event," said Laura, with a ministerial air, after we had started, "was a providential one. You, my dear Frank, were at liberty to pursue your favorite pastime of whist, in some remote apartment, without being conscience-torn respecting me. I have danced very well without you, thanks to the strangers. And you, Margaret, have had an unusual opportunity of displaying your latent forces. Three such different men! But let us drive fast—I am in want of the cup of tea which mother will have waiting for me."

We arrived first at my door. As I was going up the steps, Laura broke the silence; for neither of us had spoken since her remarks.

"By-the-way, they are coming here to stay awhile. They are anxious for some deep-sea fishing. They'll have it, I think."

I heard Frank's laugh of delight at Laura's wit, as the carriage drove off.

It was our last ball that season.

It was late in the spring; and when Redmond came with his two friends and settled at the hotel in our town, it was early summer. When I saw them again, they came with Laura and Frank to pay me a visit. Laura was already acquainted with them, and asked me if I did not perceive her superiority in the fact.

"Let us arrange" said Harry Lothrop, "some systematic plan of amusement by sea and land. I have a pair of horses, Maurice owns a guitar, and Redmond's boat will be here in a few days. Jones, our landlord, has two horses that are tolerable under the saddle. Let us ride, sail, and be serenaded. The Lake House, Jones again, is eight miles distant. This is Monday; shall we go there on horseback Wednesday?

Laura looked mournfully at Frank, who replied to her look—

"You must go, I cannot; I shall go back to business to-morrow."

I glanced at Redmond; he was contemplating a portrait of myself at the age of fourteen.

"Shall we go?" Laura asked him.

"Nothing thank you," he answered.

We all laughed, and Harry Lothrop said—

"Redmond, my boy, how fond you are of pictures!"

Redmond, with an unmoved face, said—

"Don't be absurd about my absent-mindedness. What were you saying?" And he turned to me.

"Do you like our plan," he asked, "of going to the Lake House? There is a deep pond, a fine wood, a bridge—perch, mackerel—a one-story inn with a veranda—ham and eggs, stewed quince, elderberry wine—and a romantic road to ride over."

"I like it."

Frank opened a discussion on fishing; Laura and I withdrew, and went to the window-seat.

"I am light-hearted," I said.

"It is my duty to be melancholy," she replied; "but I shall not mope after Frank has gone."

"'After them the deluge,'" said I. "How long will they stay?"

"Till they are bored, I fancy."

"Oh, they are going; we must leave our recess."

Frank and she remained; the others bid us good night.

"I shall not come again till Christmas," he said. These college chaps will amuse you and make the time pass; they are young—quite suitable companions for you girls. *Vive la bagatelle!*"

He sighed, and drawing Laura's arm in his, rose to go. She groaned loudly, and he nipped her ears.

"Good-bye, Margaret; let Laura take care of you. There is a deal of wisdom in her."

We shook hands, Laura moaning all the while, and they went home. Frank and Laura had been engaged three years. He was about thirty, and was still too poor to marry.

Wednesday proved pleasant. We had an early dinner, and our cavalcade started from Laura's. I rode my small bay horse Folly, a gift from my absent brother. His coat was sleeker than satin; his ears moved perpetually, and his wide nostrils were always in a quiver. He was not entirely safe, for now and then he jumped; but I had ridden him a year without accident, and felt enough acquainted with him not to be afraid.

Redmond eyed him.

"You are a bold rider," he said.

"No," I answered—"a careful one. Look at the bit, and my whip, too. I cut his hind legs when he jumps. Observe that I do not wear a long skirt. I can slip off the saddle, if need be, without any danger."

"That's all very well; but his eyes are vicious; he will serve you a trick some day."

"When he does, I'll sell him for a cart-horse."

Laura and Redmond rode Jones' horses. Harry Lothrop was mounted on his horse Black, a superb, thick-maned creature, with a cluster of white stars on one of his shoulders. Maurice rode a wall-eyed pony. Our friends Dickenson and Jack Parker drove two young ladies in a carriage—all the saddle horses our town could boast of being in use. We were in high spirits and rode fast. I was occupied in watching Folly, who had not been out for several days. At last, tired of tugging at his mouth, I gave him rein and he flew along. I tucked the edge of my skirt under the saddle-flaps, slanted forward, and held the bridle with both hands close to his head. A long sandy reach of road lay before me. I enjoyed Folly's fierce trotting; but, as I expected, the good horse Black was on my track, while the rest of the party were far behind. He soon overtook me. Folly snorted when he heard Black's step. We pulled up, and the two horses began to sidle and prance, and throw up their heads, so that we could not indulge in a bit of conversation.

"Brute!" said Harry Lothrop,—"if I were sure of getting on again, I would dismount and thrash you awfully."

"Remember Pickwick," I said; "don't do it."

I had hardly spoken, when the strap of his cap broke, and it fell from his head to the ground. I laughed and so did he.

"I can hold your horse while you dismount for it."

I stopped Folly, and he forced Black near enough for me to seize the rein and twist it round my hand; when I had done so, Folly turned his head, and was tempted to take Black's mane in his teeth; Black felt it, reared, and came down with his nose in my lap. I could not loose my hands, which confused me, but I saw Harry Lothrop making a great leap. Both horses were running now, and he was lying across the saddle, trying to free my hand. It was over in an instant. He got his seat, and the horses were checked.

"Good God!" he said, "your fingers are crushed."

He pulled off my glove, and turned pale when he saw my purple hand.

"It is nothing," I said.

But I was miserably fatigued, and prayed that the Lake House might come in sight. We were near the wood which extended to it, and I was wondering if we should ever reach it, when he said,—

"You must dismount, and rest under the first tree. We will wait there for the rest of the party to come up."

I did so. Numerous were the inquiries, when they reached us. Laura, when she heard the story, declared she now believed in Ellen Pickering. Redmond gave me a searching look, and asked me if the one-story inn had good beds.

"I can take a nap, if necessary," I answered, "in one of Mrs. Sampson's rush-bottomed chairs on the veranda. The croak of the frogs in the pond and the buzz of the blue-bottles shall be my lullaby."

"No matter how, if you will rest," he said, and assisted me to remount.

We rode quietly together the rest of the way. After arriving, we girls went by ourselves into one of Mrs. Sampson's sloping chambers, where there was a low bedstead, and a thick feather-bed covered with a patch-work quilt of the "Job's Trouble" pattern, a small, dim looking-glass surmounted by a bunch of "sparrow-grass," and an unpainted floor ornamented with home-made rugs which were embroidered with pink flower-pots containing worsted rose-bushes, the stalks, leaves and flowers all in bright yellow. We

hung up our riding-skirts on ancient wooden pegs, for we had worn others underneath them suitable for walking, and then tilted the wooden chairs at a comfortable angle against the wall, put our feet on the rounds, and felt at peace with all mankind.

"Alas!" I said, "it is too early for currant-pies."

"I saw," said one of the girls, "Mrs. Sampson poking the oven, and a smell of pies was in the air."

"Let us go into the kitchen," exclaimed Laura.

The proposal was agreeable; so we went, and found Mrs. Sampson making plum-cake.

"The pies are green-gooseberry pies," whispered Laura—"very good, too."

"Miss Denham," shrieked Mrs. Sampson, "you haven't done growing yet,—How's your mother and your grandmother?—Have you had a revival in your church?—I heard of the young men down to Jones', our minister's wife knows their fathers,—first-rate men, she says.—I thought you would be here with them.—'Sampson,' I said this morning, as soon as I dressed, 'do pick some gooseberries. I'll have before sundown twenty pies in this house.' There they are,—six gooseberry, six custard, and though it is late for them, six mince, and two awful pigeon pies. It's poor trash, I expect; I'm afraid you can't eat it; but it's as good as anybody's, I suppose."

We told her we should devour it all, but must first catch some fish; and we joined the gentlemen on the veranda. A boat was ready for us. Laura, however, refused to go in it. It was too small; it was too wet; she wanted to walk on the bridge; she could watch us from that; she wanted some flowers, too. Like many who are not afraid of the ocean, she held ponds and lakes in abhorrence, and fear kept her from going with us. Harry Lothrop offered to stay with her, and take lines to fish from the bridge. She assented and, after we pushed off they strolled away.

The lake was as as smooth and white as silver beneath the afternoon sun and a windless sky; it was bordered with a mound of green bushes, beyond which stretched deep pine woods. There was no shade, and we soon grew weary. Jack Parker caught all the fish, which flopped about our feet. A little way down, where the lake narrowed, we saw Laura and Harry Lothrop hanging over the bridge.

"They must be interested in conversation," I thought; "he has not lifted his line out of the water once."

Redmond, too, looked over that way often, and at last said,—

"We will row up to the bridge, and walk back to the house, if you, Maurice, will take the boat to the little pier again."

"Oh, yes," said Maurice.

We came to the bridge, and Laura reached out her hand to me.

"Why, dear!" she exclaimed, "you have burnt your face. Why did you," turning to Redmond, "paddle about so long in the hot sun?"

Her words were light enough, but the tone of her voice was savage. Redmond looked surprised; he waved his hand deprecatingly, but said nothing. We went up toward the house, but Laura lingered behind, and did not come in till we were ready to go to supper.

It was past sundown when we rose from the ruins of Mrs. Sampson's pies. We voted not to start for home till the evening was advanced, so that we might enjoy the gloom of the pine wood. We sat on the veranda and heard the sounds of approaching night. The atmosphere was like powdered gold. Swallows fluttered in the air, delaying to drop into their nests and chirped their evening song. We heard the plunge of the little turtles in the lake, and the noisy crows as they flew home over the distant tree-tops. They grew dark, and the sky deepened slowly into a soft gray. A gentle wind arose, and wafted us the sighs of the pines and their resin-odors. I was happy, but Laura was unaccountably silent.

"What is it, Laura?" I asked, in a whisper.

"Nothing, Margaret, only it seems to me that we mortals are always riding or fishing, eating or drinking, and that we never get to living. To tell you the truth, the pies were too sour. Come, we must go," she said aloud.

Redmond himself brought Folly from the stable.

"We will ride home together," he said. "My calm nag will suit yours better than Black. Why does your hand tremble?"

He saw my shaking hands, as I took the rein; the fact was, my wrists were nearly broken.

"Nothing shall happen to-night, I assure you," he continued, while he tightened Folly's girth.

He contrived to be busy till all the party had disappeared down a turn of the road. As he was mounting his horse, Mrs. Sampson, who was on the steps, whispered to me,—

"He's a beautiful young man, now!"

He heard her; he had the ear of a wild animal; he took off his hat to Mrs. Sampson, and we rode slowly away.

As soon as we were in the wood, Redmond tied the bridles of the horses together with his handkerchief. It was so dark that my sight could not separate him from his horse. They moved beside me, a vague, black shape. The horses' feet fell without noise in the cool, moist sand. If our companions were near us, we could not see them, and we did not hear them. Horses generally keep an even pace, when traveling at night,—subdued by the darkness, perhaps,—and Folly went along without swaying an inch. I dropped the rein

on his neck, and took hold of the pommel. My hand fell on Redmond's. Before I could take it away, he had clasped it, and touched it with his lips. The movement was so sudden that I half lost my balance, but the horses stepped evenly together. He threw his arm round me, and recoiled from me as if he had received a blow.

"Take up your rein," he said, with a strange voice—"quick!—we must ride fast out of this."

I made no reply, for I was trying to untie the handkerchief. The knot was too firm.

"No, no," he said, when he perceived what I was doing, "let it be so."

"Untie it, sir!"

"I will not."

I put my face down between the horses' necks and bit it apart, and thrust it into my bosom.

"Now," I said, "shall we ride fast?"

He shook his rein, and we rode fiercely,—past our party, who shouted at us,—through the wood,—over the brow of the great hill, from whose top we saw the deep motionless sea—through the long street,—and through my father's gate-way into the stable-yard, where I leaped from my horse, and, bridle in hand, said, "Good night!" in a loud voice.

Redmond swung his hat and galloped off.

Early next morning, Laura sent me a note:

"Dear Margaret,—I have an ague, and mean to have it till Sunday night. The pines did it. Did you bring home any needles? On Monday mother will give one of her whist-parties. I shall add a dozen or two to our set; you will come.

"P. S.—What do you think of Mr. Harry Lothrop? Good young man, eh?"

BONAVENTURA.

In the *Atlantic Monthly* for July, Ellen Frances Terry celebrates this grand old cemetery of Savannah in the following graceful and thoughtful verses:

The broad, white road flows by this place of tombs,
Set in the inlet's curving lines of blue.
Through the low arch, wide spreading tender glooms,
Stand the gray trees, light-veiled by those strange looms,
That weave their palest thread of air and dew.

Gray moss, it seems the mist of tears once shed;
Dim ghost of prayers, whose longing once it spoke;
For, still, its fairy, floating flags, o'erhead,
By every wind of morning visited,
Sigh in silence that were else unbroke.

Silence, how deep! The Southern day half-done
Is pierced by sudden thrills of autumn chill.
From the tall pine-trees black against the sun,
The great brawn cones, slow dropping, one by one.
Fall on dead leaves, and all again is still!

So still, you hear the rush of hurrying wings
Beyond the river, where tall grasses grow.
Far off, the blackbird eddying dips and sings,
Or on the heavy-headed rice-stalks swings,
Slow swaying with the light weight, to and fro.

This is the temple of most deep repose—
Guardian of sleep, keeper of perfect rest!
Silently in the sun the fair stream flows;
Upon its unstirred breast a white sail goes
From the blue east into the bluer west.

Nature herself with magic spell of power
Stands in these aisles and says to all things,
"Peace!"
Nothing she hears more harsh than growth of flower
Or climbing feet of mosses that each hour
Their delicate store of softest green increase,

Or flying footsteps of the hurrying rain.
No need have we to pray the dead may sleep;
Shut in such depths of perfect calm can pain
No entrance find; nor shall they fear again
To turn and sigh, to wake again or weep.

MIXED HORTICULTURE.

Mr. Boggs, in the *Ohio Farmer*, relates that, one morning his wife asked him if he could get her some roses for the front yard. He suggested Rose potatoes, as he knew a man who had some, and had the idea that ground is much better employed in raising a potato than raising a flower, unless it is a barrel of flour. His wife said he hadn't a bit of taste. She then gave him a memoranda of roses, etc., that she wanted. He continues:

I was busy all day, but as I was about taking a car for home I thought of the roses. I referred to the memoranda, and found the following:

"Get a few geraniums, fuchsias, heliotrope, roses—Bourbon, running rose, Prairie Queen, Golden Tea Plant vines, English Ivy, Wandering Jew, seeds, etc."

I studied it hard, but it was slightly incomprehensible. She had evidently got things mixed up. However, I went to a florist's, and told him what I wanted. Said I, "Give me a few geraniums and a few she's and—"

"A few what?" asked the flower man, looking puzzled.

"A few she's," said I, turning very red, I know, for I couldn't tell, for the life of me what my wife wanted of a few she's about the place, as she could never live in the same house with another woman.

As the florist looked more staggered than ever, I handed the memoranda, when he burst into a loud laugh.

"Why, man," he cried, "it's fuchsias she wanted!" and then he roard again.

Well, whatever it is, give me a couple of yards of it, front and back yard, too.

You see I was mad.

I got the things the memoranda seemed to call for, at various places, and went home.

"Here, Mrs. Boggs," said I, testily, "are the things for the front yard."

"Why, what is this," she cried, as I thrust a two-gallon jug upon her, among other things.

"Bourbon, my dear. I found it on the memorandum. Pretty thing to set out in the front yard, though. How long do you s'pose it'll stay there, with the neighbors we've got?"

"Boggs, you are an infernal ——: that memorandum was 'Bourbon Rose.' But what is this nasty little book?" holding up a dime novel with a highly-colored title-page, representing a gorgeous squaw on a fiery and untamed mustang.

"That? Why, you ordered it, didn't you? That is 'Running Rose, or the Prairie Queen,' one of the Beadle's, you know."

My wife carried it at arm's length, and threw it into the stove. Then she took the jug of Bourbon, and emptied it in the back gutter. While she was gone I concealed Eugene Sue's "Wandering Jew," which I had also purchased, for I began to see that I had made a terrible blunder in filling that order. [I have ascertained since that "Wandering Jew" is the name of a vine, but how was I expected to know all about it.]

CLIMATIC RELATIONS OF DIET.

Meat and fats, a writer in *Popular Science Monthly* says, repair the losses of the system much more speedily than vegetable substances. The latter are suitable for the inhabitants of warm countries who do not require to produce heat, which the atmosphere supplies them with abundantly. The inhabitants of cold regions, on the contrary, whose accessions of heat ought to be as continual as energetic, are urged by instinct to use meats and fats, which throw out great heat in their combustion. For instance, it is a physiological necessity that the Lapps should feed on the oil of cetacea, as it is a necessity for men of the tropics to consume only very light food. The activity of respiratory combustion and the kind of alimentation thus vary with climate, so that there is always a certain proportion maintained between the thermic state of the surrounding medium and that of the animal furnace. In like manner, in the same climate, persons who perform great mechanical labor must eat more than those who put forth but little movement. This fact, long ago observed, has received of late the clearest and surest demonstration. Yet, perhaps, it is not kept sufficiently in view in the management of public alimentation. Many examples prove the benefit that industry would derive from increasing, in all possible ways, the amount of meat used in laborer's meals.

MARRIED LIFE.

This is good counsel from a wife and mother:

"I try to make myself and all around me agreeable. It will not do to leave a man to himself till he comes to you, to take no pains to attract him, or to appear before him with a long face. It is not so difficult as you think, dear child, to behave to a husband so that he shall remain forever in some measure a husband. I am an old woman, but you can still do what you like; a word from you in the right time will not fail of its effect; what need have you to play the suffering victim? The tear of a loving girl, says an old book, is like a dew drop on a rose; but that on the cheek of a wife is a drop of poison to her husband. Try to appear cheerful and contented, and your husband will be so; and when you have made him happy you will become so, not in appearance, but in reality. The skill required is not so great. Nothing flatters a man so much as the happiness of his wife; he is always proud of himself as the source of it. As soon as you are cheerful you will be lively and alert, and every moment will afford you an opportunity to let fall an agreeable word. Your education, which gives you an immense advantage, will greatly assist you."

A ROMANCE IN REAL LIFE.

A romantic story is told of the marriage of the Archduke Johan, a lately deceased brother of the Emperor of Austria. While traveling in Styria, he came to a post-station where the postmaster (not an individual who delivers letters) could not forward him, owing to the absence of his post-boy with another party. Johan was anxious to proceed, and insisted on being furnished with the means. The postmaster's daughter, a beautiful girl, called her father one side, and after a short conference the prince was informed that the horses would soon be ready; and presently at the door stood the fresh relay of horses, with a fair-haired post-boy, booted and spurred, astride one of the horses. It was not long, however, before Johan found out the sex of his driver, and fell desperately in love with her, and finally married her.

The Puzzle.

For Our Young Folks.

AROUND MY HOME.

Wild is the scene around my home
In the country far away;
Within the wild woods where I roam,
It's always fair and gay.

The song of many a bird at morn
Is ringing sweet and clear,
Re-echoing o'er the dewy lawn
And trilling everywhere.

Flowers on banks of winding streams
Look up at the shining sky,
Catching the rays of bright sunbeams,
On their petals soft to lie.

Gently the small and pearly waves
Beat on the sandy shore,
Where the timid trout his bright sides laves,
And the sunlight gilds him o'er.

And the pleasant breeze comes bounding free
Through many a grassy glade,
And sighs in every leafy tree,
And cools each dim fantastic shade.

Wadmalaw. HARRY.

A CHILD SHALL LEAD THEM.

Two children were playing on a lawn in front of a white cottage. Around the porch and windows climbed roses and honeysuckles. Smooth walks, bordered with flowers, ran through the lawn; and everything about the cottage and grounds had an air of taste and comfort.

A little way off, and across the road, stood another cottage; but very different in appearance. The lawn in front was overgrown with weeds, and the walks with coarse grass. The fence that enclosed the lawn was broken in many places, and the gate, held only by the lower hinge, stood half open and awry. No roses or vines hung their green and crimson curtains about the window, or clambered up the porch. The cottage had once been white, white as that before which the children played; but now it was dingy and soiled, and looked forlorn and comfortless.

There was as much difference in the appearance of the children as in the two cottages. One was neatly and cleanly dressed, and had a happy face. The clothes of the other were poor and soiled, and his face had a sober look. One played with a hearty enjoyment, laughing and shouting at times; the other in a quiet and subdued way.

Why this difference between the two cottages and the two children? When just built, the cottages and grounds were alike in size and beauty, and they that dwelt in them alike happy.

It is sorrowful to give the reason. You will know it soon.

"Jim, isn't that your father?" asked the well-dressed boy, as a man appeared coming down the road a little way off.

Jim started in a half-scared manner, and turned towards the road. He stood very still for a moment or two, looking at the man, and then with a face now red and now very pale, shrank away and laid himself close down upon the grass under some currant bushes, saying as he did so, in a choking voice,

"Don't, Freddy, please, tell him I'm here."

Light and joy went out of Freddy's face also. He understood too well what all this meant.

Staggering down the road came Mr. Harwood, Jim's father. What a sad sight it was. As he drew nearer, and Freddy Wilson, held to the spot where he was standing as if bound there by a spell, saw his red and swollen face, and heard him muttering and swearing to himself, he shuddered with a feeling of horror.

As Mr. Harwood was passing the gate he saw Freddy and stopped. Freddy began to tremble. His first thought was to run back to the house; but he was a brave little boy, and it went against his feelings to run away from anything. So he did not move.

"Is my boy Jim here?" asked Mr. Harwood, in an angry voice. Some men when drunk are always ill-natured and cruel, and Jim's father was one of these. Seeing Freddy, and knowing that the two boys played much together, he naturally thought of his own son.

Freddy did not answer. He could not tell a lie, and so he said nothing.

"Did you hear me?" growled Mr. Harwood, more angrily.

Still Freddy looked at him and said nothing. He knew that if Jim's father found him there, he would kick and cuff him all the way home. Not that Jim was in any fault, or

had disobeyed his father; but Mr. Harwood, as I have said, was full of anger and cruelty when drunk, and took a savage pleasure in abusing his little boy.

Freddy began to feel braver now, because he wished to save Jim from harm. This is usually the way. The moment we forget ourselves, when in danger, and become anxious about others, fear leaves us, and we grow calm and brave.

There was a bolt on the inside of the gate near which Freddy was standing. With a stealthy motion, not seen by the drunken man, he slipped this bolt and fastened the gate. It was not done an instant too soon, for Mr. Harwood, growing furious, made a dash towards the boy, and tried to get at him through the gate.

"You young dog!" he cried, "I'll teach you manners! Why don't you answer me? Where's Jim?"

Mr. Harwood rattled the gate violently, and tried, with his unsteady hands, to find the bolt on the inside. But his efforts were in vain. He could not reach the little fellow, who stood close up to him, with a brave but sorrowful face.

"You'd better go home, sir. I'll tell my father of this." There was a manly firmness in the air of Freddy, and a rebuking tone in his voice, that had their effect upon the drunken man.

"Who cares for your father? I don't!" he replied, moving back a step or two from the gate, muttering and swearing.

"But I say, youngster!" and he came toward Freddy again, with a scowling look on his swollen and disfigured face. "Just answer me one thing. Say yes or no. Is that young scamp of mine here?"

"I don't know any young scamp of yours, Mr. Harwood," replied Freddy.

"You don't hey! Now that's cool for a model young gentleman like Master Wilson. Don't know my Jim!"

"I know your Jim very well," said Freddy. "But he's a good little boy, and not a young scamp; and I don't think you are a kind father to call him such an ugly name."

This rebuke was felt by Mr. Harwood, drunk as he was. He could not stand Freddy's clear eyes and steady look. Then away down in his heart, almost covered up and lost, was an old feeling of fatherly pride, and this stirred at the words of praise spoken about Jim. "A good little boy."

The anger went out of Mr. Harwood's face.

"He was a good little boy once," said he, with something so like tenderness in his voice, that Jim, who was lying close by, hidden under the currant bushes, listening to every word, sobbed out aloud.

"What's that?" asked Mr. Harwood, leaning forward and looking toward the currant bushes.

But the sound was hushed in a moment. Jim had choked down his feelings.

"He's a good little boy now," said Freddy, speaking in a very firm voice, and not seeming to hear the sob, or the question of Jim's father. "A good little boy," he repeated; and added, to make his assertion stronger, "There isn't a better one anywhere about here, if his father does beat him about, and let him go ragged when he ought to have good clothes like the rest of us."

Mr. Harwood didn't stop to hear anything farther, but turned from the gate toward the poor cottage across the road, walking more steadily than he had done a short time before. Then Freddy went behind the currant bushes where Jim still lay on the ground.

"He's gone," said Freddy.

The pent up grief of Jim's sad heart could be restrained no longer. He burst out into a wild fit of crying, that continued for several minutes. Freddy said all that he could to comfort his little friend; and when he had grown calm, asked with the soberness of one who felt in earnest,

"Can't something be done, Jim?"

Jim shook his head in a hopeless way.

"Something ought to be done! I'm sure something could be done, if we just knew what it was. Oh! isn't drinking an awful thing!"

"It's the worst thing in the world," said Jim, and it's no wonder he thought so. "When father is sober," he went on, "he's just as kind as he can be; but when he's drunk—oh dear! it's dreadful to think of!"

"Does he get drunk very often?" asked Freddy.

"Now he does. He's drunk most all the time. But it wasn't so always. Oh dear!" And Jim's tears ran over his cheeks again. "He used to be so good to us," he sobbed, "and take us out with him sometimes, and buy us nice things. He never does it now. 'Most all the money he gets is spent at the tavern. But I must run home. Mother is sick, and father is so cross when he's been drinking; and she's weak and can't bear it."

Jim got up from behind the currant bushes and walked toward the gate.

"Aren't you afraid he'll beat you? He was in a dreadful rage at you about something just now," said Freddy.

"Maybe he will and maybe he won't," answered Jim. "But I mustn't stop to think of that. Mother is sick and weak, and father will be so cross to her." And he started off and passed through the gate.

Freddy, remembering how his defence and praise of Jim had cooled Mr. Harwood's anger, said to himself, "Maybe I can do some good," and started after his little friend, resolved to face the drunken man again, in the hope of turning away his wrath.

The two lads entered Jim's poor home to-

gether, and stood face to face with Mr. Harwood.

"O father!" exclaimed Jim, as he saw, with glad surprise, a look of almost tender pity on his father's countenance; and as he spoke, he sprang forward and caught his hand, clinging to it tightly.

This was too much for Mr. Harwood, who was not yet sober enough to control his feelings, and he turned away with a choking sob, trying to draw his hand out of Jim's; but the boy would not let go his hold. And now Freddy spoke out in behalf of his little friend,

Jim's a good boy, Mr. Harwood. I know all the boys around here, and there isn't one of them better than Jim. Father says so too; and lets me have him over at our house whenever I please."

"Who said he wasn't a good boy?" answered Mr. Harwood, turning round upon Freddy with a half angry manner. "I'd just like to hear anybody speak against him, I would!"

And he sat down, drawing Jim between his knees as he spoke.

A pale, thin, half-frightened woman, Jim's mother, now came in from the next room, wondering what all this could mean. Her eager eyes ran hurriedly from face to face.

"Don't be scared, Ellen," said Mr. Harwood, kindly. "There isn't anything wrong. I'm only having a little talk with these boys."

He was almost sober now; excitement of feeling had cleared his stupid brain. Looking from one to the other of the lads, he could not help noticing the painful contrast; one so clean and well dressed, the other soiled and ragged.

He knit his brows closely, and sat very still, like one arguing with himself.

"I'll tell you what it is, mother," and he turned toward Mrs. Harwood, "I'm not going to have Jim running about looking like a beggar's child. He's just as good as any of the boys around here, and I'll not have him ashamed to be seen with the best of them."

Jim covered his face with his hands, but could not hide the tears of joy that came trickling through his fingers. His father saw them. Laying his hand on the boy's head, he made this promise, speaking in a solemn voice:

"I will drink nothing stronger than tea or coffee while I live, God being my helper!"

"Oh, thank God!" almost wildly exclaimed Jim's mother, dropping upon her knees and clasping her husband's neck. "Oh, thanks be to God!" she repeated. "He will be your helper. In Him is all compassion and all strength; but without Him, our poor resolves are as flax in the fire."

Freddy stood looking on for a little while, greatly moved by what was passing; then he walked quietly to the door, and was going out, when Mr. Harwood called to him, saying,

"Just one word before you go. I'm sorry to say it; but it's in my thought now, and I feel it had better come out. May be I wouldn't say it another time."

Freddy stopped and turned toward Mr. Harwood.

"I'm sorry to say it, Freddy, I am, for you're a nice boy and have always been good to Jim. But you'll thank me for it, may be, one of these days."

There was something in Mr. Harwood's manner that sent a feeling of alarm to Freddy's heart. He stood still, waiting, every pulse-beat sounding in his ears.

"May be your father's head is stronger than mine was five years ago," said Mr. Harwood, "but I've seen him at the Black Horse too often of late, going on just as I began. It isn't safe, Freddy! It isn't safe! And I don't like to see him there. Look at what I've come to! But there was a time when I could hold my head as high as Mr. Wilson or anybody else in the neighborhood."

Freddy waited to hear no more. It seemed as if night had fallen suddenly on his young spirit, and as if the air would suffocate him. He turned and ran wildly away, such a weight on, and such a pain in his heart that it seemed as if he would die.

Mr. Wilson was coming along the road, and near his own gate when he saw Freddy hurrying across from Mr. Harwood's cottage, his face white as a sheet, and strongly agitated.

"My son! What ails you?" he cried in alarm,

"O father!" It was all Freddy could say, as he stopped before him and looked up with a strange, sad, grieving expression on his countenance.

"I don't believe it!" he cried, after a few moments, bursting into tears and hiding his wet face in his father's hands. "It's all a lie of Mr. Harwood's!"

"Don't believe what?" asked Mr. Wilson, wondering at all this. "A lie of Mr. Harwood's! What has that drunken wretch dared to say?" His voice changed to an angry tone.

"I can't tell you, father. It would choke me. But it's all a lie. Oh, I wish I hadn't said anything about it! But I felt so miserable, and you came right on me."

Mr. Wilson led Freddy within the gate to a seat under one of the trees.

"Now, my son," he said, in a kind, firm voice, "tell me just what Mr. Harwood said."

Freddy then related all about the drunken man coming to the gate, and what had occurred there; and all that he saw and heard when he went home with Jim, even to the warning words of Mr. Harwood.

As Freddy came to this last part, Mr. Wilson turned his face so far away that his son

could not see it; but Freddy felt his father's arm that was around him drawn more tightly. At least a minute passed in dead silence. Then Mr. Wilson laid his lips closely and with a long pressure on Freddy's forehead.

"I will talk with Harwood about this," he said, in subdued tones, as they arose and went toward the house. "Poor man! he was nearly lost. But there is one more chance to save him."

And he was saved. Mr. Wilson went to see him that very day. Their interview was affecting to both, and good for both. The warning sentences had not come a moment too soon, and Mr. Wilson felt this so deeply that he could not be angry with his poor friend. No one ever saw either of them at the Black Horse after that; nor did they ever again permit the cup of confusion to come nigh their lips. T. S. ARTHUR.

HEALTHFULNESS OF FRUITS.

Fruits and berries at this season of the year are not only precious luxuries, but great promoters of health. They act upon the liver, promoting that secretion naturally which many are in the habit of obtaining only by means of artificial medicines. They thus avert many a disease resulting from a torpid condition of the liver. Another way in which they act beneficially is in the mechanical effect their little seed produce in passing through the bowels, very much the same as the watering of an irritated eye-ball when any hard substance touches that delicate organ, and this water, by dissolving the hardened contents of constipated bowels, keeps them in a healthier state than any pill or purgative invented by the apothecary. There can be no doubt that in the Summer and Fall seasons, people who live mainly on fruits and berries and coarse bread can almost ensure exemption from sickness, while those who eat heartily of solid meats and vegetables two or three times a day are liable to all the diseases that flesh is heir to.

THE PRINTING PRESS.

I love, Dr. Chapin says, to hear the rumbling of the steam-power press better than the rattle and roar of artillery. It is silently attacking and vanquishing the Malakoffs of vice and the Redans of evil, and its parallels and approaches cannot be resisted. I like the click of the type in the composing-stick of the compositor, better than the click of the musket in the hand of the soldier. It bears a leaden messenger of deadlier power, of sublimer force, and of surer aim, which will hit its mark, though it is a thousand years ahead.

PHYSICAL CULTURE.

A DOCTOR'S STORY.

I.

Good folks ever will have their way—
Good folks ever for it must pay.

But we, who are here and everywhere,
The burden of their faults must bear.

We must shoulder others' shame—
Fight their follies and take their blame;

Purge the body, and humor the mind;
Doctor the eyes when the soul is blind;

Build the column of health erect
On the quicksands of neglect.

Always shouldering others' shame—
Bearing their faults and taking the blame.

II.

Deacon Rogers, he came to me;
"Wife is a-goin' to die," said he.

Doctors great, and doctors small,
Haven't improved her any at all.

Physic and blister, powders and pills,
And nothing sure but the doctor's bills!

Twenty old women with remedies new,
Bother my wife the whole day through;

Sweet as honey, or bitter as gall—
Poor old woman, she takes 'em all.

Sour or sweet, whatever they choose,
Poor old woman, she daren't refuse.

So she pleases who e'er may call,
An' death is suited the best of all.

Physic and blister, powder and' pill—
Bound to conquer, and sure to kill!"

III.

Mrs. Rogers lay in her bed,
Bandaged and blistered from foot to head.

Bandaged and blistered from head to toe,
Mrs. Rogers was very low.

Bottle and saucer, spoon and cup,
On the table stood bravely up;

Physic of high and low degree;
Calomel, catnip, boneset tea:

Everything a body could bear
Excepting light and water and air.

IV.

I opened the blinds; the day was bright,
And God gave Mrs. Rogers some light.

I opened the window; the day was fair,
And God gave Mrs. Rogers some air.

Bottles and blisters, powders and pills,
Catnip, boneset, syrups and squills;

Drugs and medicines, high and low,
I threw them as far as I could throw.

"What are you doing," my patient cried;
"Frightening Death," I coolly replied.

"You are crazy!" a visitor said;
I flung a bottle at her head.

V.

Deacon Rogers he came to me;
"Wife is a-comin' around," said he.

"I re'lly think she will worry through;
She scolds me just as she used to do.

All the people have poohed and slurred—
All the neighbors have had their word:

'Twas better to perish, some of 'em say,
Than be cured in such an irregular way."

VI.

"Your wife," said I, "had God's good care,
And His remedies—light and water and air.

All of the doctors, beyond a doubt,
Couldn't have cured Mrs. Rogers without."

VII.

The Deacon smiled, and bowed his head;
"Then your bill is nothing," he said.

"God's be the glory, as you say!
God bless you, Doctor! good day! good day!"

VIII.

If ever I doctor that woman again,
I'll give her medicines made by men.

W. M. CARLETON, *in Maine Farmer.*

ONE OF WOMAN'S RIGHTS.

A writer in the *Home Journal* asks two pertinent questions: "*Why* is woman so weak?" and "*Why* so easily overborne in the struggle for bread?" And answers them by saying: "Mainly because she is held to no persistent career of training in the field of useful labor." The editor of *Appletons' Journal* answers the questions somewhat differently. He says: "Woman is weak because her sex is persistently overworked—because her physiological conditions imperatively require periods of rest, and these conditions are disregarded, sometimes through necessity, but oftener from ignorance or through recklessness," and adds:

What women have a right to demand is an *exemption from labor*. They should have occupation. They should have employments to keep busy their hands and their minds. But sustained or persistent labor—labor that comes as a strain at those times, the nature of which all women understand, and labor that comes when the whole resources of the system are needed to support the second life borne within the bosom—is wofully disastrous, not only to the immediate sufferers, but to many succeeding generations.

Give women exercise. In childhood, let them have the physical activity that boys have. When womanwood begins, let the necessities of the sex subordinate every other consideration. There are regular periods after this event, when rest for the body is an imperative requirement. Hence all forms of labor that are uniformly exacting; all forms that disregard the special requirements of the laborers in matters pertaining to sex, are a fatal social blunder. Women clerks, for instance, who have to stand all day at the counter, will be sure, if they marry, to give to the world a still more enfeebled race of beings.

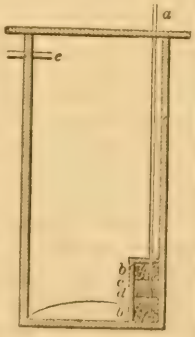
Not labor, we repeat, but exemption from labor, is what women have a right to demand. They have one supreme mission in this world—that is, to be mothers—and to this great end all other considerations are secondary. Bread-winning, of course, is with many women an imperative and immediate necessity. Hence effort should be made to secure for them all lighter and less exacting employments. Many must labor even when disease and hastened death will be the inevitable results; but all of us should understand, and all of us be forced to concede their one supreme claim—the right of *rest*—labor being a necessary, perhaps, but none the less calamitous violation of a fundamental natural right of sex. Let women demand the privilege of motherhood, and the right of support from man; and men who won't marry ought to be taxed for their benefit—which is revolutionary, perhaps, but good doctrine nevertheless.

Not long ago, on the occasion of the meeting of the Patrons of Husbandry, in Kansas, word came that one of their number was sick, and unable to work his crops. The next day a large number of men and teams came to his farm and put everything in nice order.

Domestic Economy.

FILTERING WATER.

In view of the fact that the water we drink is not unlikely to be crowded with dangerous germs, it seems the part of wisdom to adopt the simple precaution suggested in our heading. The New York *Weekly Tribune* shows, as follows, how a portable filter may be made of a common stoneware or earthen jar, such for example as is shown in the figure at the left. The bottom is filled with stones as large as a goose egg, or is covered with a perforated slate slab, leaving a space to hold a supply of filtered water. A faucet is fitted into a hole bored through the side of the jar, as near the bottom as may be. On the slab or stones is placed a layer of coarse gravel, cleanly washed; over that a layer of clean washed sand; then a layer of powdered charcoal, also well washed, still another layer of sand, and then one of coarse gravel, both washed perfectly clean. The remainder of the space is for water. A cover or a wet cloth placed over the top excludes dust. If a porous jar is used the evaporation from the outside during hot weather will keep the contents almost ice cold, particularly if it is kept in a current of air. The same filtering arrangement may be applied to a cistern, as shown by the accompanying illustration. At the lower corner is seen the chamber into which the pipe (a) discharges. The layers of material are seen at b b, the gravel: at c c, the sand, and d, the charcoal; e is the overflow pipe. As the filter will need to be taken out occasionally to wash the contents, it is well to make the chamber quite distinct, so that access may be had to it at any time without disturbing the cistern or its contents. These hints may prove useful to some of our correspondents who have recently made inquiries.



THE USE OF PARIS GREEN.

In view of the increasing use of Paris Green as an insect destroyer, Messrs. Wm. M. Bird & Co., of this city, furnish their customers with printed cautionary directions for its use, to enable them to avoid danger. We extract the following paragraph:

There is great danger in the mixing of this Green for Potato, Bug and Cotton Worm Poison, owing to the fine dust which arises in the process, which is inhaled, and also rapidly absorbed by the pores of the skin, especially if the person using it should be in a state of perspiration. To guard against this, the hands and face (particularly the nostrils) should be protected as much as possible, and should be carefully washed after working in it, or in any of the preparations of which it is an ingredient. As it penetrates and poisons wood—gets into the seams and crevices of articles made of metal—and even into earthenware that is at all porous; all household utensils, or anything in barn or stable (which cattle or horses could have access to) in which the article may have been mixed, or from which it has been used, should be carefully set aside and never again used for any other purpose. The free use of milk as a beverage is recommended, but we have found hydrated per-oxide of iron (a simple harmless remedy) the best antidote.

MERE MENTION.

—— Messrs. Walker, Evans & Cogswell have done a good thing in issuing a new edition of "House and Home, or the Carolina Housewife," by a Charleston lady, a book which has had great popularity among our housekeepers, but which has been long out of print. It is now enlarged and corrected, (containing over 600 recipes,) got out in excellent style, the paper being tinted, and the typography clear and beautiful. [Charleston, S. C.; price, $1.50].

The American Institute of the city of New York, will hold its 42d Exhibition this Fall, opening on the 10th day of September next, and continuing until late in November. The South should be represented there as well as the North, the East and the West, and action should at once be taken in the matter. For circulars, address Chas. Wager Hull, General Superintendent American Institute, New York City.

Hale's Early Peach.

THE

Rural Carolinian.

Progress with Prudence, Practice with Science.

D. H. JACQUES, Editor.

Vol. IV.] CHARLESTON, S. C., SEPTEMBER, 1873. [No. XII.

Thoughts and Suggestions for the Month.

September is a busy month on the plantation. Cotton picking is in full operation, and is the most important work of the month, where the great staple is the principal crop. Let it be pressed with all your energy and force, so as to gather the lint as fast as the bolls open. You lose both in quantity and in quality by delay. The first pickings should be well sunned. Do not allow your hands to pull off the bolls in picking, as they are sometimes inclined to do; and avoid picking immediately after a shower. In all cases where large quantities are stored in bulk, stir the heaps occasionally, and expose the cotton to the air to keep from heating. Keep the different qualities of cotton separate, so as to avoid selling mixed cotton for the price of the poorest portion of it. It is best, if practicable, to gin cotton as soon as dry, as it is far safer in bales than lying in bulk in the gin house.

———We believe in the early sowing of fall oats, but the exact time must depend upon the state of the weather and the soil, and the exigencies of the other plantation work, as well as upon the degree of latitude; but in our own experience, oats sown in September have generally proved decidedly better than later sowings. It is a mooted question how it is best to cover oats, the general practice, however, being to plough them in. Running the plough very lightly, this does tolerably well, but a better way, we think, is to cover with the harrow, and then pass a roller over the field. The Red Oat is the best kind to sow, as not liable to rust. It is known by its brownish red husk, and has a thinner and more flexible but strong stem. The Black Poland Oat is a very heavy and very valuable kind, but not so safe from rust as the Red. By the middle of this month, or at latest by the end of the month, rye for winter grazing should be sown; also, barley for the same purpose. The ground should be well enriched, especially for the barley. Both should be heavily seeded—rye two bushels to the acre, and barley from three to four.

———Some who are intending to sow clover and grass will doubtless desire to sow them with their small grains. This is the practice at the North, and we have been inclined to favor it, but later experiments force us to the conclusion that it is best, in our climate at least, to sow them by themselves. If sowed, as they should be (unless a severe drought should prevail) during the present month, they will, on suitable soil, attain such a growth before the hot weather of next season sets in as will insure them against injury, without the shade of the grain, which will be injured by the clover and grass, while injuring them in return. In any case, the land for clover and the grasses should be rich and thoroughly prepared by deep, close ploughing, followed by harrowing, previous to which a good dressing of superphosphate may be applied with advantage. Brush lightly to cover and by all means roll the field with a tolerably heavy roller. This last is an important and too generally neglected process. If you are to sow both clover and the grasses, on the same field, it is best to sow the clover by itself, as the seed does not mix well with the grass seed. The various kinds of grass seed may be mixed, before sowing.

———A dressing of lime on land to be sown with wheat, oats, or clover and the grasses, is, in a majority of cases, one of the most remunerative applications that can be made, provided lime can be procured at reasonably cheap rates. It is not merely as plant-food that lime is useful. It is still more important as a preparer of plant-food. Its reaction with the acids of the soil, its strong action upon decaying vegetable matter, and its faculty of converting clay into mud, and rendering it mechanically fit for culture, are some of its more obvious uses, and, as a general rule, it may be assumed that the land which is richest in vegetable substances will benefit most by the free use of lime, and gravelly sand the least.

———If a stand of turnips has not been obtained from August sowings, sow again now. Thick sowing pays, as the extra cost of seed is little compared with the better chances of a stand. The fly will, very likely, take a part, and you must make allowances; besides, a thick stand protects itself better against the hot sun. It cannot be too often repeated, that we attach too little importance here to the turnip crop. If planted on thoroughly prepared and heavily manured soil, no crop pays better.

———Make hay, and save carefully all forage crops. You will not have too much, or, if you have any to spare, your neighbor will be glad to buy. Don't depend upon New York and Pennsylvania for forage. Northern hay will be high.

———It is far better, when possible to do so, to gather cow-peas than to turn in the stock to feed them on the ground, as much is thus wasted. When gathered, you can use them to the best advantage, and none are lost.

———Sorghum must be cut, ground, and the juice made into syrup; and let it be of the *best quality*. Save every blade and all the seed for feeding stock.

Notes on Planting.—VI.

Recording and understanding the results of planting will constitute the subject of this article and the next.

The simplest system of commercial book-keeping requires a Day-Book, in which all the transactions of the business are set down, without special order except as to time; a Journal, in which the contents of the Day-Book are periodically separated and arranged in proper debit and credit form; and a Ledger, in which the items from the Journal are consolidated in particular accounts, and from which every year the balance sheet is drawn. To show fully the operations of a farm, narrative is necessary as well as accounts; but the whole record is still most clearly exhibited by adhering to the divisions sanctioned by commercial experience.

These books may be kept in one volume or in three; but however modified in this respect, the office and distinction of each book, as summarily given above, must, to secure reliable results, be kept in mind. A good plan is to use two volumes; in the first of which is not only contained the Day-Book proper, but also part of what belongs to the Journal; and the second embodies the more important accounts of the Journal, with the proper contents of the Ledger. This is specially adapted to cases where a manager is employed, who makes the entries in the first volume, but will apply when there is no manager; and it has the advantages that the second volume contains, in compact form, all the transactions of the year which it is desirable to preserve for future reference. An accurate topographical map of the plantation is also needed, showing fields, forests, and their areas, together with roads, water-courses and buildings. This must be made by a professional Surveyor, if the planter is not himself competent to the task. The books are of convenient size, properly indexed, substantially bound, and without special ruling into forms. It is preferred to make a form as needed at the proper page, with a pencil.

The following abstracts exhibit these books as kept. The essential accounts only are given. Others will no doubt be kept by every planter, (such as an account with a particular field, with the mule mare, with cattle or other stock, etc.,) but it is believed that in the examples given, a system adapted to a planting business, such as that of which we have written, and based upon correct principles of book-keeping, is sufficiently indicated.

First Book.—(Kept by Manager.)

The first entry should be a copy of the written agreement under which the manager serves, verified by the signature of the proprietor in whose hands is the original.

The second entry is an inventory of stock, implements, &c., accurately made on the 1st of January, by the manager and proprietor conjointly, which will be given here in full as exhibiting the number, kind, and cost of these deemed necessary

upon an ordinary six mule pine land plantation. The articles in this inventory are first put at cost, and each subsequent year are valued at what is deemed their increased or decreased value.

INVENTORY OF STOCK, IMPLEMENTS, &C., AT SHORT STAPLE, 1ST JANUARY, 187–.

Mules.

Raider, 9 years old	$130		
Radical, 7 years old	150		
Ku-Klux, 6 years old	175		
Carpet-bagger, 5 years old	160		
Taxation, 4 years old	150		
Trouble, 3 years old	140	$905	
Mule mare	150		
Mule colt, over 2 years	100		
Mule yearling	60	310	$1,215

Oxen.

1 yoke grade steers, 5 years old		100

(The bull below is an extra work animal.)

Cattle.

1 bull, Brahmin and Devon cross	$100	
4 grade cows	160	
4 calves	24	
4 yearlings	40	
4 2 year olds	80	404

(The 3 year old are annually marketted.)

Hogs.

1 boar, Berkshire or Essex	30	
6 grade brood sows	60	
30 shotes and pigs under 12 months	75	165

(The shotes over 12 months, some 23 or 24, have been slaughtered the previous December.)

Implements, etc.

1 four-horse wagon	$150	00	
1 ox cart	100	00	
1 mule cart	60	00	
1 fifth chain and two stretchers	12	00	
1 set wagon wheel gear, with leather collars	20	00	
1 wagon saddle	10	00	
1 ox yoke and iron bows	5	00	
1 riding saddle and bridle	10	00	
7 open plough bridles	7	00	
7 pair block hames	10	50	
7 pair plough traces	7	00	
7 back-bands	4	20	
7 pair plough lines	3	50	
1 Murfee's subsoil plough	7	00	
2 two-horse Brinley ploughs	25	00	
With extra points	1	50	
2 two-horse plough whiffle trees	5	00	
7 Brinley plough stocks, with shovel standards	33	00	
7 common sweep plough stocks	10	00	
10 assorted plough swingle trees	10	00	
7 Brinley half shovels	14	00	
4 Brinley straight shovels	10	00	
4 five-inch scooters	6	00	
7 buzzard wing sweeps	21	00	
4 solid sweeps	12	00	
1 Scotch harrow	25	00	
Amount carried forward	$577	70	$1,884

	Amount brought forward	$577 70	$1,884 00
1	one-horse cultivator	10 00	
1	Whitner's seed planter	45 00	
2	Dow Law planters	40 00	
3	Ellerbee's transplanters	12 00	
3	West's distributors	16 50	
1	shovel, 1; 1 spade, 1.25	2 25	
2	manure forks	1 50	
8	rakes, (4 iron, 4 wooden)	5 20	
1	sickle, 75; 2 cradles, 9	9 75	
2	grass blades and snaths	3 00	
4	grub hoes, 3; 20 weed hoes, 20	23 00	
8	axes, 16; 4 iron wedges, 2	18 00	
1	balance, 5; 1 scales, 12	17 00	
7	curry combs, 1.40; 1 horse brush, 1	2 40	
1	nest measures, 2.50; 1 set liquid measures, 75	3 25	
	Half dozen padlocks	12 00	
	Cotton sheets and baskets	30 00	
1	tin horn	75	
	Carpenters' Shop.		
	Grindstone, handsaw, crosscut-saw, files, hatchet, broadaxe, drawing knife, vise, monkey wrench, set augurs, set chisels, square, etc., say	30 00	
	Blacksmith Shop.		
	Usual outfit, say	40 00	
	*Gin House.**		
1	fifty saw-gin	$175 00	
1	thresher	45 00	
1	fan	43 00	
1	corn sheller, (Virginia)	40 00	
	Belting	20 00	—$1,223 30
			3,107 30
	Articles rec'd after Inventory Made.		
1	dozen laplinks	$ 50	
1	axe	2 00	
1	sweep	3 00	
	Etc., etc.		

Next follows the Day-Book proper, and a sufficient space is set apart to record consecutively the operations of the whole year. Every transaction and event on the place to be recorded is here first set down without order except as to date. It is the foundation of anything like reliable book-keeping, and the entries must be made minutely and faithfully every night.

The following exhibits the manner in which it is done:

DAY-BOOK.

Short Staple, 187—.

January 7th.

White frost; clear day; rain at night.

Commenced work to-day with twelve regulars, and irregulars equivalent to six full hands on place—see contract. Issued rations to regulars 36 pounds bacon and 3 bushels meal. John, Henry, Jim and William splitting rails in branch forest—

* These are the machines at the gin-house, when horse power is used, and only plantation work is to be done. When steam or water power is used, or toll work done, see estimates in a previous article, and treat gin-house as a separate business on the accounts.

tasked at 120 rails. George with ox-cart, hauling wood etc., to Mr. L. M.'s family. Jake and Joe, with mule-wagon, hauling rails. The other regulars, five in number, cutting logs for rolling in the Hodge-field. Two irregulars, Lucy and Jane, raking out fence row. Spotted sow farrowed last night—seven pigs. Commenced feeding stock cattle on shucks to-day. The harvest fields still afford some pasturage, beside cane in the creek swamp. The oxen, bull and milch cows, in addition to shucks, have for all about 1 bushel soaked cotton seed and ½ bushel corn meal per day. Ration for mules, 1 bushel corn and 36 pounds fodder per day; the mare 5 quarts corn and 6 pounds fodder; the mule colts between them 3 quarts corn, and shucks. The mare, mule colts and milch cows run two or three hours each day on rye lots; the work mules and oxen graze these lots on Sundays. Stock hogs receive about a peck of corn (chiefly rotted and shattered) daily. No further notice of stock rations will be taken in Day-Book until they are changed. Sold John 6 pounds bacon for his family at 12 cents; paid cash. Let Lucy have a peck of meal to-night on her day's work. Estimated to-day, in conjunction with Mr. L. M., the corn on hand to be 1,200 bushels; the crib was guaged; about 10,000 pounds blades in fodder loft. Bacon on hand weighed up; 600 pounds Cincinnati sides. The plantation pork slaughtered last month will be weighed up when cured. Henry cut his foot with his axe, and lost half day—wound slight. Sent Mr. L. M.'s family 10 bushels corn, $10; 2 ox loads wood, $3; 4 pounds butter, $1.20. Drew for my own use, 50 pounds bacon, $6, and 2 pounds butter, 60 cents.

January 8th.

Clear with wind, etc.

The accounts posted by the manager from the Day-Book are principally the laborer's cash accounts; accounts with supplies received and issued; account of supplies furnished proprietor's family, and an account of supplies furnished his own family. The following are examples:

Jem Crow's Cash Account.

187 .

Commenced work 7th January.
Ended 21st March.
Money wages $8 per m. = 33⅓ cts. per work day at 5½ per week.

Jan. 10.	Sold him for his family 10 lbs. bacon at 12 cents, and 1 peck corn at 25 cts.	$1 45
Feb. 7.	Paid ½ balance wages	2 55
15.	Sick 5½ work days	
	Cost rations sick days	61
Mar. 7.	Paid ½ balance of wages	2 87
21.	Discharged for inefficiency	
		$7 48

Recapitulation.

7 Jan. to 21 March, 58½ work days less 5½ lost=53 days at 33 2-5		$17 70
Charges above	7 48	
Balance	10 22	17 70

21 March, 187—. Received payment in full ten 22-100 dollars.

Testis: C. D.

his
JEM ✕ CROW.
mark.

(When the proprietor is in easy distance of plantation it is best that he should be cashier and pay on orders given by manager. In the other case the manager must be furnished with necessary cash, and must then also keep an account between himself and money received and expended.)

Bacon Account.

187—.			lbs.
January	7.	On hand by weight, sides	600
			lbs.
		Issued rations regulars	36
		Sold John	6
		Sold myself	50
	15.	Issued rations	36
		* * * * * *	
		* * * * * * Etc.	538
		Waste in issuing	42
May	15.	Sides gave out; same day weighed up plantation made bacon	1,980
	22.	Issued rations regulars	36
		Sold Mary on wages	6
		Sold Henry on wages	7
	23.	Sent Mr. L. M's. family	426
		* * * * * *	
		* * * * * *	1,822
		Waste in issuing	158
October	1.	Received one hhd. sides from Factor	797
		Issued, etc., etc.	

Corn Account.

187—.			bush.	pks.
March	7.	On hand (estimated by guaging crib)	1,200	0
			bush.	pks.
		Issued rations regulars	3	0
		Sold Lucy on her wages		1
		Sent Mr. L. M	10	0
	15.	Mules ration last week	7	0
		Ox ration last week	3	2
		Hog ration last week	1	3
		Issued ration regulars	3	0
		* * * * * *		
		* * * * * *	1,080	0
		Waste and shrinkage	120	0

Account Mr. L. M's. family.

187—.				
January	7.	Sent 10 bushels, corn at $1	$10 00	
		Sent 4 lbs. butter, at 30c	1 20	
		Sent 2 ox loads wood	3 00	
February	1.	Cr. by 2 days carriage horses and coachman, hauling rails		6 00
May	23.	Sent bacon 426 lbs., at 12c	51 12	
		Sent 202 bushels corn	202 00	
August	15.	10 hands two days at work on pleasure grounds	10 00	
October	10.	Cr. by 300 lbs. cotton picked by house servants		1 50
Dec.	31.	Balance due Short Staple		269 82
			277 32	277 32

This account, as well as the similar one with the manager's family, must be scrupulously kept. A "living" for these two families may absorb the profits of a considerable farm, showing no favorable balance, when, in fact, it is doing well. Book-keeping does not make money. It only shows how it comes and where it goes; and enables one with certainty to spot a leak, or lop an unprofitable branch.

In addition to foregoing accounts, the manager's book contains the record of cotton picked which is entered directly without first going into the Day-Book. This record is usually kept in tabulated form, showing date and amount gathered by each picker, and should also show the yield by field and cut, (or division of field,) as well as amount gathered at each going over of the crop.

The other crops as harvested are entered in Day-Book. So also all sales of stock, pork butchered, etc. The next, and closing article, will exhibit the mode of keeping the Second Book. LOW MIDDLING.

All Cotton and no Comfort.

I have read with great interest, in the August number, of the RURAL CAROLINIAN, the essay of Mr. Shannon on "Exclusive Cotton Planting." I have no doubt that it strkes the right key-note. As in most cases, when "so much can be said on both sides," the extreme opinions on either side are equally wrong—those who "would have everybody plant cotton and nothing but cotton, as much as those who decry all who do so." There is a measure in all things, and there are few things earthly that, by exaggeration, cannot be carried *ad absurdum*.

There are some points, however, which I think should be more distinctly noticed; and on these I propose to offer a few words.

Planting (*i. e.* producing a single or a few crops only, for sale) as contra-distinguished from *farming* (in which the greater part, or the whole, of the family subsistence is produced at home, the surplus only being sold)—planting, I say, requires a good business capacity on the part of the manager, and strict business habits, to be successful under ordinary circumstances. There is so much room for mismanagement and loss, in turning over the capital—first in the sale of crops, and then in the purchase of all the supplies, through middle men; there are so many things which can be done more economically on the large than on the small scale, when properly forecast and carried out, as to render it is not at all surprising that men who, as a rule, do not keep regular accounts, or even make out a general balance sheet at the end of the year, should come out *minus*, under, apparently, the same circumstances which have enabled their neighbors to make handsome profits. So soon as it comes to buying and selling *extensively*, the producer requires as much busines tact as the merchant, to hold his own. That business tact, and especially those business habits, are gifts not possessed by every one. Therefore, it is not advisable for every one who knows how to cultivate cotton, to be a cotton planter.

Again, and here I touch one of our sore points, when the family subsistence has to be bought by a visible outlay of actual cash, the majority of those engaged in agricultural pursuits will confine themselves to a minimum in everything, including

even what in our age, may fairly be considered necessary comforts of life. Witness the everlasting, unvarying bacon, greens and corn bread, that form the round of existence in many of our cotton planting regions—unrelieved by that pleasing variety of meats, vegetables, fruits, honey and a number of other creature comforts which form the natural *adjuta* of a "farm" all the world over; including even our pine woods, whose inhabitants, unable to raise or to dispose of their cotton to advantage, actually live better, more pleasantly, and above all, more healthfully than thousands of cotton raisers, "worth" ten or twenty times as much, but too much engaged in "making money" to take a thought of home comforts or embellishment. How often has it been my lot, even in ante-war times, when pursuing the (somewhat thankless) vocation of "State Geologist," to come forth more than unrefreshed from the table of an exclusive cotton planter worth his $50,000 to $100,000, and sit down with satisfaction to my humble camp fare, of which "strong" (*i. e.* yellow and rancid) bacon, sodden, greasy greens boiled therewith, and corn bread made of water and unsifted meal, formed no part. And with what pleasure, at other times have I sat down to the table of an humble "piny-woods" cabin (whose denizens knew not cotton, and saw the "store" only when their supply of sugar and coffee gave out,) to a meal as substantial, as pleasant, of all sorts of home-raised dainties, such as are proverbially supposed to abound in country homes, but which "are not" where cotton reigns supreme.

These may be deemed hard words, Mr. Editor, for aught I know they may not apply to South Carolina, as nevertheless to my personal knowledge, they do to much of the cotton belt of the Nothwestern Gulf States.

"Exclusive cotton raising" makes a merchant of the producer. If he be an educated man, this will not necessarily diminish his attention to home comforts and attractions; as, indeed, was but too well proven by the sumptuous and hospitable mansions of our "cotton lords" in times past. But to a large portion of its producers cotton has been, and still is, a hard master; and its exclusive culture is no more the legitimate business of every one cultivating cotton soils, than is any other branch of exclusive agriculture. The self-sustaining farmer, who creates most of the necessaries and comforts of life around him, will not grudge his family a little extra personal effort to make things even a little more pleasant; and every one in the household will aid willingly in such efforts, of which the immediate results are foreseen. But it is far otherwise, when those efforts must be directed towards the making of the extra dollars and cents, which the purchase of the same things would cost. It is *home-making*, not money-making, that evokes the willing help of every member of a rural household.

And it is precisely this important business of home-making, which is sadly neglected with us; whether in deference to King Cotton, or to King Mammon in any other shape—*peu importe*. So long as the heart-strings that should centre in every child's home, are no stronger than purse-strings, so long as a mere existence, with the physical toil of production, and the bare prospect of a satisfactory balance sheet, at the end of the season, is all that our youth see before them in the life of a farmer, so long will we vainly endeavor to make a country life outweigh with them the attractions of the cities, unless, as the Boston *Advertiser* lately suggested by studiously keeping them in ignorance of "something better."

"*Est modus in rebus.*" I honor the cotton plant, as a benefactor to the human race at large. But we have allowed ourselves to be enslaved by it, and we have gambled with it; and, as usual in such cases, we have been demoralized by it, to the detriment of our intellectual and home life, and lasting injury to our soils. There is nothing that is created so good that it cannot be abused, as the culture of cotton has been—not by the fault of the "Royal Plant," but by our own race after mammon through its means.

May the new generation take warning from the faults of its elders, and, taking a higher view of a farmer's life than a merely pecuniary one, remember that "there's no place like home;" and that few homes can be made more truly pleasant, no life more indpendent and free from fortune's freaks, than that of an intelligent, educated farmer.

EUGENE W. HILGARD.

Wheat Culture, Rotation of Crops and Drainage.

In an article contributed to the RURAL CAROLINIAN, in Oct., 1870, I referred to the production of this crop in Union County, in this State, prior to the war, and mentioned the system pursued in obtaining a yield of fifty-two-and-a-half bushels per acre. In my future efforts this high figure was not reached, but the success attending them convinced me that with careful cultivation, and a liberal application of fertilizers, forty to fifty bushels may be grown on any of our lands suited to the crop. As the season for preparing lands for this most important crop will soon be upon us, it may not be amiss to repeat my mode of treatment. On the removal of a wheat crop in the month of June, I had the land thoroughly ploughed with a two-horse plough, turning in the stubble to the depth of eight or nine inches. About the end of July, I cross-ploughed fully as deep, then harrowed twice, after which I drilled the land for turnips, applying at the rate of 250 pounds of good Peruvian Guano to the acre, which was put in the furrow and covered by the two-horse plough, after which the beds or rows were rolled down so as to make a flat surface for the crop. The seed proving very bad, however, and the stand inferior, I determined on putting the field in wheat. With this view I again started my large plough, and by the end of August had all ready for seed. The ploughing this time was done about nine inches deep, completely turning in a most luxuriant growth of weeds which had taken the place of the turnip crop. I then sowed in the first week in September, at the rate of one bushel of wheat to the acre, the variety being the "Mogul," a large grain white wheat, then common to that section of country. The seed was covered by giving it a few strikes with a good sharp toothed harrow. The stand was fair, and during the winter tillered remarkably well, indeed so much so that I feared it would be too thick. When full grown it stood about five feet all over the field, and notwithstanding the destruction of nearly an acre by rice birds, the yield was from seven acres 369 bushels of as fine wheat as I ever saw, weighing sixty-five pounds per bushel, being fifty-two-and-a-half bushels to the acre.

Now that planting on a large scale cannot be done profitably, would it not be

well for those engaged in the business to diversify their crops, adopt a regular rotation, and have their fields of clover and cereals as well as cotton? It is true that the hot sun of June and July may cut short the former crop, but an experience of several years proved to my entire satisfaction that clover can be grown successfully in the upper portion of the State, and it is believed that it will succeed equally as well in the South. If the planters would adopt a *five-course* rotation—say cotton, corn, wheat, oats or rye, clover and pasture, they would very soon find the benefit of it in the improvement of their lands and stock. On ploughing the pasture lands in September or October, with a large two-horse plough and thoroughly burying all vegetation, the soil would be found in excellent order for the succeeding cotton crop, as the winter frosts would render it loose and friable, and a thorough pulverization be obtained, making easy its preparation for the crop. On lands treated in this manner, it is no exaggeration to say that double the yield might be looked for.

Whilst it is unquestionably true that our planting or farming interests never will succeed satisfactorily without a regular system of rotation in crops, there is another great desideratum in our agriculture, and that is the want of underground drainage. This is but little understood by our best agriculturists, or if understood is not practiced by any. Along the seaboard, as well as through the interior, the want of drainage has destroyed not only the healthfulness of the country in many sections, but has caused much of the former to be totally unfit for the residence of the white race during the summer months. On travelling through the upper sections of the State, the wide, deep serried gullies every where meeting the eye, with the remains of old homesteads and worn out lands, plainly bespeak the remains of the system. At the bottom of all this misfortune to our country is the want of drainage—deep and thorough drainage—not less than 3 to 4 feet, and filled with pipe tile running with the slope of the hill, and not father apart than 24 to 30 feet, depending on the poverty of the subsoil. This followed by deep tillage would prevent the formation of gullies by a removal of the surface water through the drains, and in time of drought would by the same channels supply the crops with moisture from below. This is a permanent improvement, whilst all substitutes with planks or poles, &c., are of too temporary a nature to be worthy of notice.

When our farmers understand and carry out this improvement, *then will the era of successful agriculture begin*, and the many arid waste places to be seen every where in our State, will very speedily assume a new garb, and will "blossom as the rose."

Most of our planters, however, do not understand the advantages of drainage, and we must look to the rising generation to carry out such improvements. Then to interest our youth in public agriculture would it not be possible to establish a model farm in every county, near the different Court Houses as possible, and procure a competent superintendent for each; have on each a pipe tile making machine, and carry out farming as it ought to be. This could be done by the counties, and the establishments made self-supporting, the students performing all the work in return for the instruction obtained by them. A. M. L.

25th *July*, 1873.

Sulphurous Acid Fumes and Vegetation.

CHARLESTON, S. C., May 27th, 1873.

To the President and Directors of the Sulphuric Acid and Super-Phosphate Company:

GENTLEMEN: In accordance with instructions from the President, I proceeded North to see the largest and oldest manufacturers of Sulphuric Acid, and both by personal interview and correspondence, and the assistance of friends, to ascertain what, if any, damage is done to the vegetation surrounding, and in the vicinity of Sulphuric Acid "Chambers." The results are embodied in the following report and accompanying documents:

In order to understand intelligently the subject, it is necessary to advert briefly to the chemistry of the manufacture of sulphuric acid so as to show what gasses may and do escape.

Sulphuric acid is a combination of sulphur with the gas oxygen ($S O^3$), and dissolved in water; this oxygen comes from the atmosphere.

The union of the sulphur with two-thirds of the oxygen necessary, is readily effected by its combustion in atmospheric air, and a gas results composed of one equivalent of sulphur and two of oxygen, ($S O^2$). This is called sulphurous acid gas, and is familiar in the smell of burning sulphur matches; it is irrespirable, a non-supporter of combustion, not inflammable, and highly poisonous, especially to insects: the moist gas possesses considerable bleaching powers, especially towards yellow colors: it is itself colorless, has an offensive odor, and produces spasm of the glottis: its specific gravity is 2.22.

The remaining one-third of oxygen is also obtained from the atmosphere, but by an indirect process.

If we introduce the vapor of nitric acid into an atmosphere composed of steam, sulphurous acid and atmospheric air, the nitric acid, ($N O^5$) readily parts with three of its equivalents of oxygen, and becomes reduced to the form of binoxide of nitrogen, ($N O^2$), while these three equivalents of oxygen combine with three parts sulphurous acid ($S O^2$), and make three parts of sulphuric acid ($S O^3$), which is dissolved in the steam and condensing runs down as a liquid; meanwhile the binoxide of nitrogen, ($N O^2$), being in the presence of atmospheric air, immediately absorbs two parts of oxygen and becomes hyponitric acid gas ($N O^4$); this gas still in the presence sulphurous acid, ($S O^2$) then gives up to this latter two of its portions of oxygen, and becomes again reduced to the form ($N O^2$), which re-absorbing oxygen again becomes ($S O^4$), to go on in like manner until all the sulphurous acid ($S O^2$) is changed into sulphuric acid ($S O^3$). Thus, we see, that if chambers are properly managed, that is, if the proportions and reactions of these gasses are justly arranged, the only resultant gasses are a mixture of hyponitric acid gas ($N O^4$), and the free nitrogen of the atmospheric air, which had given its oxygen to the sulphurous acid; and if this mixture is passed through an apparatus known as "Gay Lussac's condensers," as it is at the Etiwan Works, there only remains free nitrogen to escape: in this case, there can, of course, be no damage; and even when the mixture escapes, though hyponitric acid in a concentrated state would be hurtful, yet its quantity is so small, and it is so diluted by the atmosphere as to act rather as a fertilizer than injuriously.

To give some idea of the enormous diluant power of the atmosphere, I would state, that if the carbonic acid gas produced by the combustion of only 18 tons of coal was distributed six feet deep over one square mile, the air would be rendered highly poisonous to animals, and life become extinct; and yet in every large city many times this quantity is consumed, and yet no injury results to the population.

The only damage, therefore, which can happen to vegetation around acid chambers, is when from ignorance or neglect, the condensation of the sulphurous acid gas is incomplete, and it is allowed to escape into the air, this bad management must also last for a considerable time in order to have any appreciable effect, and this effect would always be greater the closer the plants to the chambers, for from the great density of the gas it would very soon fall to the earth.

Years ago when the price of acid was very high, and the manufacture, not so well understood, large amounts of sulphurous acid were habitually allowed to escape, and damage ensued, but now that competition has rendered the loss of this valuable gas a vital point to the interests of the manufacturer, the management and arrangements have been so perfected that damage is unknown.

The acid chambers of the Pennsylvania Salt Company, at Natrona, Pa., are in a very narrow valley; a fine stream of water comes down from one of the high hills which was of great service to the company. The owner of the land along the upper portion of the stream took a notion to change its course, which deprived the company of its use, legal proceedings were instituted by the company to recover their water course, and the fellow seeing he would get the worst of it gave up reluctantly and said he would "fix them yet;" so he went and planted a vineyard on the side of one of the hills, in a place where he thought was the greatest chance of the fumes from the chambers damaging his crop—the results are that he raises some of the the finest grapes in Western Pennsylvania.

Mr. Gardiner, of Waltham, Mass., says that thirty years ago they got six cents per pound for oil of vitriol and yet made no money, now they get two cents per pound and make plenty of money, and the reason is that formerly a large portion of sulphurous acid escaped uncondensed, and so money was lost, and that at that time there was some damage done to vegetation close to the chambers, but now with the modern improvements all or nearly all this gas is condensed, no money goes into the air and no harm is done.

Mr. Morgan, of New York, says he does not think any harm is done and that at his works the superintendent has a garden which never suffers from the chambers.

Dr. Shepard, as you will see from his letter and whom I also saw personally, has given the facts as regards many chambers both in this country and in Europe, and his experience is corroborated by the experience of Dr. Liebig, in Vienna and also in America.

The united testimony appears to be that chambers properly constructed and managed never do any damage, even when the red fumes of hyponitric gas are not recovered; and that chambers badly made that is leaky, and persistently mismanaged so as to allow the constant escape of sulphurous acid gas, will probably do harm immediately around the chamber, and the radius of the circle of harm varies in the opinions of different manufacturers from 150 feet to as many yards.

Something has been said of the well known damage done by certain works in England and on the Continent, and this has been adduced as proof in the present case; but this is a misapprehension of facts. Some chemical manufactures are continualy attended with the evolution of large quantities of highly poisonous gases and vapors, such as chlorine, hydrochloric acid, nitric acid, and in smelting works the vapors of lead, antimony, arsenic; these do damage, and also in the process of "roasting" ores in which the metal is combined with sulphur, the latter burns and passes off as sulphurous acid, and does damage when long continued; this happened in Wales, and the law compelled the smelting companies to adopt some method of condensing the sulphurous acid, which was done by putting up chambers, and turning the gaseous sulphurous acid into the liquid sulphuric acid, since which time there has been no complaint.

All of which is respectfully submitted.

W. W. MEMMINGER, M. D., *Chemist S. A. and S. P. Co.*

LETTER FROM THOS. P. SHEPARD.

PROVIDENCE, R. I., February 22d, 1873.

Dr. W. W. Memminger, Charleston:

MY DEAR DOCTOR: I was much pleased to see your hand writing again this morning, and in reply to your inquiry state that I am familiar with most of the chemical works in New England, and I have heard of *no* complaint of any damage done to crops by the escape of the sulphuric acid chambers—to particularize: In Salem, Mass., are three chambers; works in the midst of market gardens, onion crops and pear trees; have been going forty years. In Newton, seven or eight chambers; usual farming and gardening crops around, forty years or more, (twenty-five years) here in Providence; five chambers; no crops now grown near by for the city has about surrounded us, but we have a lot of fine old trees near our premises, some of them within twenty feet of the chambers, which display unusual vigor, and the grass on the premises is better than any in the neighborhood, and it is not cultivated, nor any manure applied to it, except what the rain washes down occasionally out of the air of the escaping gases of the works, probably a little N. O⁴.

The same I can say of the two chemical works in Paris that I know well. They are both in the midst of a crowd of market gardens and gardeners and no complaints ever made.

I should tell the same account of all the chemical works I know of, but the above I know best, and they are enough.

The fact is that more attention is given to novel smells in the country than in cities, and a farmer is always disposed to attribute any accidental injury to his crop to whatever is new. I do not think there can be a doubt, that if sulphuric acid chambers are *properly run*, no sort of damage is done by them to neighboring crops, no matter how near.

Have you seen C. Morfit's book on Superphosphates. From the price ($20) it ought to be good? If I can give you any further information, write me.

With regard truly yours, THOS. P. SHEPARD.

LETTER FROM G. A. LIEBIG.

BALTIMORE, May 3, 1872.

Messrs. W. M. Ellicott & Sons:

DEAR SIRS: In reply to your enquiry whether the manufacture of sulphuric acid is detrimental to the growing crops in its neighborhood, I do not hesitate to say that a properly constructed and conducted acid chamber is of no injury whatever to the adjoining vegetation.

Only when for want of care and attention, gases which the chemist desires to keep inside, are allowed to escape, we may occasionally notice that vegetation suffers.

Near my native city, "Vienna," are a number of large acid factories, situated right in the midst, and surrounded on all sides with vinyards, all in prosperous condition, which would certainly not be the case if my statement is incorrect, and the manufacture of acid in chambers detrimental to vegetation.

Very truly, yours, G. A. LIEBIG.

LETTER FROM P. S. CHAPPELL.

BALTIMORE, May 7th, 1873.

Messrs. Wm. M. Ellicott & Sons, Baltimore:

GENTS: In answer to your inquires as to whether in my experience the manufacture of sulphuric acid is detrimental to vegetation in the neighborhood of my works, I can say that the best evidence I can offer that it is not so, is the fact that there is now, and has been for years, a market garden adjoining my property, which the owner has repeatedly enlarged and is now conducting actively.

Yours, respectfully, P. S. CHAPPELL.

Labor Saving Implements.

"The Proof of the Pudding lies in Chewing the Bag."

Any planter who has had any experience with the labor of the day must long since have come to the conclusion, that we cannot farm successfully, without the introduction of labor saving implements, of the *simplest* and most *economical* kind. The farmer is by nature and education conservative—his isolated position makes him and keeps him so. We have seen men plough with the same old fashioned plough their grand-daddy used for years, while their neighbor, with a fence only between them, was doing, every day, better work with half the labor. There is another reason too—a great many of the "so-called" labor saving implements, which have been introduced from time to time, have been either made by persons who were not familiar with our wants or were badly constructed and not adapted to our labor. We have always maintained the opinion that all improvements which amount to any real good, must be worked out by our own people—who by observation and experience have learned exactly which we needed, and the difficulties to be surmounted by our people.

We had heard a good deal of Minter's Cultivator—had read your comments, Mr. Editor, and looked at the cuts in the RURAL. We had seen practical farmers look at it and express an opinion *ex cathedra* like, that "it wouldn't do," "it was a horse killer," and all that. Yesterday we accidentally dropped in on Mr. Minter's farm and enjoyed the pleasure of having our doubts removed.

He was just entering a field of corn and cotton laying by the first and giving the second its last working preparatory to laying it by.

The corn was on a light sandy ridge land, which has been in cultivation since the writer was a boy. It had been manured in the hill with a "good hand grab of stable manure and a spoonful of Carolina Fertilizer to each hill." The corn was firm, well bunched and vigorous, and free from grass or weeds. The work performed by the cultivator was admirable, leaving everything clean, with a smooth, broad, flat bed.

It had been cultivated almost exclusively with the cultivator, and its present condition, (after a rainy, grassy season,) demonstrated that the work had been well done, and that the cultivator did not make the grass grow, as an old fogy told us it "only would." We were particularly pleased with its working of cotton—one sweep accomplished as much (and it was admirably done) as the best ploughman could by two furrows with a shovel and bow. The earth was thrown well up to the cotton, making a smooth, broad, flat bed and leaving a small ridge in the middle, which in 8 or 10 days would be thrown out with shovel and wide bow, laying by the cotton in admirable condition. When the cotton is young it can be sided without difficulty by one sweep of the cultivator—the mule will soon learn to walk the bed so as not to injure the young plant. By putting on the centre plough, the cotton could be laid by at one sweep; but Mr. Minter prefers leaving a ridge in the centre for 8 or 10 days. We noticed Mr. Minter's mules; they were

not very large—were fat, sleek, and bore no marks of sore shoulders, back or sides, or any signs of the lash. The ploughmen, (negroes, who are always dead against your "new-fangled fixings,) told us that the cultivator was not hard on a horse, and after getting used to it, easy to manage. We came away with the conviction that on all light lands, free from rocks and stumps, it would pay any farmer, (be he ever so poor,) to invest $12 in Minter's Cultivator.

AN OLD FARMER.

What a Western Man Thinks of the South.

We hear much of the great, fertile West and its superior advantages. The West is truly a magnificent and productive region; but it has its disadvantages and drawbacks, like all other regions, and we venture to say that even the least fertile portions of the South offer to-day greater facilities for making money by farming, and enjoying rural life at the same time, than any of the new States or Territories of the far West. A western man, Mr. George Willard, now residing near Aiken, S. C., seems to have come to a similar conclusion and we commend his letter, copied below from the *Aiken Journal* to the attention, not only of western and northern men, but of those among our own people who are disposed to croak and to depreciate our "poor piney lands." Mr. Willard says:

In the first place we have here as good a climate as there is in the world. The soil is poor, but realizes the effect of manure remarkably quick. I came here from Michigan four years ago last April. Really I could not see how a man could make a living here, but I was willing to try, for the reason that I could not live in Michigan on account of the asthma. I suffered all that is possible for man to suffer; now here I scarce have it at all. Last April I planted 19 acres in cotton, on land that I had been trying to improve every year. The yield is 22,425 pounds of seed cotton. You may say that is no great thing. True, it is not, but some of my neighbors have done much better. My near neighbor produced eight bales of 450 pounds each on nine acres; another neighbor on 22 acres produced 27 bales of 450 pounds each; another, Mr. Fitch, had nearly one bale to the acre. Now you will say that is no great thing either. Now Doctor, you must understand that this same land four years ago would not produce more than one-fourth of one bale to the acre.

The commercial fertilizers that I used cost $200. One ton of Raw Bone made into compost with cotton seed and stable manure was superior to the others. Lime did pretty well, but stable manure is much the best, you know.

We are not hindered here all winter from hauling leaves and other trash from the woods, and of that there is a great abundance, as you know. There is only a small portion of the country yet improved. Now I have not a doubt that by making the most of our resources, we can in a few years make our land produce double what it does now. Let every man remove every obstruction, and then plough deep, and manure deep. It is not well for any man to purchase a large farm unless he has large means. No one need expect to win here in farming without perseverance. But by close application to business, with a little capital, he can win. Our help is reasonably good. There is not a more quiet place in the world I think, or more healthy. Large numbers resort here every winter for their health, and very many are benefited.

Associative Farming and Living.

Experiment has proved that judicious farming of 100 to 200 acres, pays although the farmer hires all his work done and only oversees it himself. What, then, the profit of farming 1,000 to 2,000 acres, which one man will oversee as well as 100 or 200. If one lady can oversee the kitchen work for ten, she can as easily oversee that for 100 or 200, with the increased facilities that an association or corporation would furnish. Now with these data settled, suppose fifteen, or say twenty farmers, join their capital and purchase 2,000 acres of land for a farming and stock-growing domain, with a water power for manufacturing and milling purposes. Select on this domain a convenient site for corporation buildings, consisting of a store-house, kitchen, dining-room, laundry, library, reading-room, lecture-room, school, with sleeping rooms above, all of which are corporation property. Outside this plot and surrounding it in circular form, are as many acre-and-a-half or two-acre lots as there are members of the corporation, who hold each one share of stock and no more, on which are erected the cottages of the various members, which, with the lots on which they stand, are the individual property of their occupants, and where their families reside. These cottages may be so arranged as to bring them within about twelve or thirteen rods of the dining hall, a short walk for persons in health summer or winter. Let the dining hall be furnished with a table for each family, and when the meal is over each returns to the family cottage ar home.

Now for the working of the corporation. All that is required in the treasury is simply working capital for six months and no more. If members choose to work, they do so for wages, as if they were not members. In the store department the orders of members are honored and goods charged.

In the boarding department each member is charged according to the number in the family, and in school with the number of pupils he sends. At the end of every six months let settlements be made between the corporation and its several members, whose accounts will show the amount of labor performed, and also the indebtedness of each member. Sales and expenses will show the degree of prosperity, and out of the proceeds of each man's indebtedness is deducted six months' working capital retained, and the balance due each member paid to him, with which he does what he pleases. G. FISH, *in New York World.*

Timely Farm and Plantation Topics.

The South as a Grass and Hay Making Country.

We witness here one of those strange anomalies which sometimes occur in human affairs, in which coals are are not only carried to Newcastle, but Newcastle buys them with avidity and leaves her own black diamonds in the mines. The coals which come to our Newcastle take various forms, prominent among which is that of bales of Northern hay; and they go all over the South in every train of cars, right into the midst of a country where the principal business of the agriculturist, during the entire growing season, is killing grass! Here we eagerly buy it and pay more than it is worth—here where hay enough might be made to supply the whole of North America. Leaving out of view, for the present, the question whether we can cultivate clover and the English grasses with profit or not, we need simply to call

attention to the fact that we have here two grasses—not native but thoroughly naturalized—which leave little to be desired except for a winter pasture, for which rye may be sown.

We refer to crab grass and Bermuda grass—the first for hay, the last for pasturage. Little is thought of either, except as pests, which they certainly are when growing where we don't want them. Are we told that crab grass hay is an inferior article compared with that made of northern herds grass and timothy? If it is so (and we fear the allegation is too true of most of it) it is because we don't make it aright. Better hay can be made of crab grass than is generally brought here from the North. Some of our farmers, notably the "truckers" on Charleston neck, have learned how to do it, and the result is hay which is destined to drive the northern article out of our market.

The Use of Lime in Agriculture.

The value of lime as an application to most soils, and particularly to those in which humus abounds, has been demonstrated again and again; but in regions remote from where it is made, the cost is so great that it is practically unavailable. That has been the case over a large part of the South, remote from the limestone formation. This obstacle has been effectually removed, so far as this region of the Low Country, at least, is concerned, by turning our inexhaustible marl beds to account in its manufacture. From the marl which underlies a vast extent of country, of which Charleston is the base, a lime is now made which can not only be sold cheaply, but is undoubtedly far superior to stone-lime as a manure; and we greatly mistake if this marl deposit do not prove, in the end, the source of even greater wealth and prosperity to the country than even our phosphate rocks. We have lately had our attention called to the effects of this lime on various crops, but especially on corn and grass, and in some cases these have been so astonishing that we fear to speak of them particularly, lest they should prove to be exceptional and calculated to mislead. Of the great value of this lime as a fertilizer, however, we have, no doubt whatever, and we shall take occasion to say more of it hereafter.

Association and Co-operation among the Negroes.

The colored people of Colleton County have adopted associative and co-operative principles in the purchase and cultivation of the land, forming societies, and paying in regular dues till enough has been accumulated to buy a plantation, which they then apportion among themselves, but continue to act associatively in whatever pertains to the general welfare of the colony. Some of these associations, as we learn from the *Walterboro' News*, have been in operation three or four years, and have won a notable degree of success. In our opinion "the white folks" might, with advantage, take a hint from their dark-skinned fellow-citizens in this matter.

Paris Green and the Cotton Worm.

We have too few facts at hand, as yet, to pronounce with certainty upon the success of the Paris Green remedy for the cotton caterpillar. It is being tried pretty extensively, however, and we shall have some reliable data on which to

base our action next season. The reports we have received, so far, seem to indicate: 1st. That the poison, when properly applied, will kill the worms. 2d. That as new foliage comes out, it not being affected by the poison, repeated applications may sometimes be necessary. 3d. That when not properly mixed, or when applied in too great quantity, the plant is seriously injured by it. Experience will remedy the defects in the present mode of application, and we hope make the remedy of great practical value.

Lucerne, Alfalfa or Chili Clover.

These are the various names under which the *Medicago sativa* of the botanists is known in this country. Call it by whichever name suits you best, but by all means try a "patch" of it. Its peculiar home seems to be in a warm, dry climate, where severe frosts seldom occur. It does best in a well-drained and friable alluvial soil, with a penetrable subsoil of an argillaceous nature. In this climate it may be mown six times, or oftener, each year, after the first, and be pastured during the winter or for a period of three months. The ground must be made very rich and be deeply ploughed and subsoiled. On clean land it may be sown broadcast, but generally it is best to drill it about a foot apart. It will take about ten pounds of seed to the acre if sown broadcast, but less will do if carefully drilled.

Scarlet Clover, (Trifolium incarnatum.)

This is another forage plant of which we have favorable reports, but with which we have no personal experience. The *Farm and Home* advises to plant a patch of it, and directs to prepare the ground well; make it deep, loose and friable; enrich it liberally by an application of genuine superphosphate; and sow toward the end of the month from twelve to sixteen pounds of the seed, covering with a brush harrow and finishing with a roller. By the middle of February, the *Farm and Home* adds, this patch will supply an abundance of rich food for the milch cows during February, March and April, and then give a crop of a ton and a half or two tons of excellent hay.

Gleanings from Many Fields.

THE FARMER'S FACTS AND FIGURES.—Apropos of the "Farmer's movement," the *Prairie Farmer* arranges some statistics of wheat production and consumption, furnished by Mr. J. R. Dodge, of the Department of Agriculture, with very striking effect. Its summing up is as follows:

New England wants	16,503,520	Tennessee has a surplus of	2,734,730
The Middle States N. want	24,134,100	The Pacific States	22,237,263
" " " S. "	4,786,508	The Northwestern States	65,459,490
The South Atlantic States want	10,495,275		
The Gulf States want	12,012,445	Total	90,831,483
Total	67,931,848		

Here are 90,000,000 bushels breadstuffs to supply a deficit of 68,000,000 bushels, leaving an excess of 22,000,000 which must find other markets. But the point to which we wish to call attention is this: Here is a clear capability in one part of

the Union of producing breadstuffs, while other parts of the Union cannot produce them cheaply, and can succeed in other directions. New England has no aptitude for growing wheat, but can manufacture at every water fall of her sparkling streams, and whiten the New Foundland banks with the sails of her fishermen. Georgia and South Carolina can grow the finest cotton, but they can grow only 15 bushels of corn to the acre. The Great West cannot grow cotton profitably, but it is the most fertile grain growing region of the republic.

The lesson is manifest: we want a diversified agriculture, in which each section shall grow what it can grow best, and exchange with those who produce what it cannot. But to do this we must have *cheap transportation.*

THE KEHDIVE'S LITTLE FARM.—There are some big farms out West, and before the war some pretty extensive planting operations were carried on here in the South, but probably the most extensive farming the world ever saw is now being done by the ruler of Egypt:

He has, this year, 25,000 acres in sugar cane, and he will raise about 20,000 bales of cotton, some of which, being of the Sea Island sort, will sell in England at 70 cents a pound. It is true he does not own all the land that raises these crops, but he takes the whole and pays what he pleases; and if the people say they will not work, he sends his soldiers and makes them. More than this, they must do their work well, stir around early in the morning, and keep busy all day. There must be no fooling. Nor will he allow cotton speculators; everything must go direct to the commission houses. He has the best kind of cotton gins and presses, extensive sugar works, and 200 steam ploughs.

A NEW MANURE PLANT.—The scientific journals are calling attention to the *Amarantus Blitum* as a source of nitrate of potassa, and if the observations of Mr. Boutin, who has lately investigated its properties, should be confirmed by future experiments, it will make a new epoch in the fertilization of the soil:

The *Amarantus blitum* is a common weed in Europe, and was first noticed by Boutin in the hands of a laboring woman scouring brass. He supposed that it must contain some free acid, or acid salt. He found to his surprise that the salt was quite neutral, and contained only saltpeter. The author maintains that this plant is superior to guano as a manure. Its superiority consists in its power to combine atmospheric nitrogen and oxygen into nitric acid; after which this powerful acid is able to decompose the silicate of potash in the form of insoluble sand and clay about its roots, and uniting with potash, forms soluble saltpeter, which is absorbed and fixed in the plant.

TURPENTINE FOR THE TURNIP BEETLE.—A correspondent of *Bell's Messenger*, says:

A friend of mine has for some years past been in the habit of moistening his turnip seed with turpentine (in the same manner as seed wheat is prepared to prevent smut) the night before sowing, as an antidote to the turnip fly—more properly, the *turnip beetle* (*Haltica Nemorum*), with so much success, that he assures me that his turnip crops have since been exempt from the attacks of this voracious little insect, while on one or two occasions, the crops of his immediate neighbors—whose seeds had not been so prepared—were more or less eaten up by them.

Horticulture and Rural Adornment.

Horticultural Hints for September.

This month opens what may be called our second spring, and if we take advantage of it, we may have an abundance of most kinds of vegetables in our gardens during the fall and winter, especially here in the Low Country. Sometimes great care and frequent re-plantings are necessary to secure a stand, so hot is the sun and so violent the rains, but perseverance generally crowns our efforts with success. Our directions must be mainly the same as for last month. Most operations that were neglected or failed in August, may, in this latitude, be repeated now.

———Cabbages must be transplanted for winter heading and seed sown for spring cabbages. European seed is generally recommended as best, but we have always succeeded with American seed. Continue to sow turnips and kohl rabi, also beets, carrots, swiss chard and parsnips, if you failed to get a stand last month. To protect tender young plants, as cabbage, beets, carrots, etc., from the sun and beating rains, set bushes between the rows, reclining a little over them; or lay bushes on crotches raised three or four feet above the bed.

———Lettuce, Radishes, Spinach, Mustard, will do well planted this month; and, in the Low Country, Snap Beans are still in order for planting during the first week, and will do well if the fall be favorable. Onions, also, for the main crop, if not already planted, may now be got in.

———Prepare lands for orchards and vineyards. New land is best, and it need not be rich for either peaches or grapes. A stronger soil for apples and pears is desirable. November and December are the best months for planting trees and vines generally, but it is well to have the land prepared and the holes dug in advance.

———Strawberry beds should now be prepared; and if you have young plants and the weather favors, plant during the month, watering and shading the plants, if necessary. When planting on a larger scale than the garden's limit permits, we prefer later planting. It is too early to have plants shipped from a distance.

———In the flower garden, bulbs of the early flowering plants, taken up last spring, should be set out during the present month, including snow drops, narcissus, Iris, jonquils, crocus and hyacinths. Sow stock, pink, pansy, larkspur, mignonette, and other hardy annual, biennial and perennial plants; and set out rose, geranium and other cuttings.

———To increase your supply of house plants, if desirable, you may take up from the open ground and put in pots young volunteer seedlings of various annuals such as Salvia, Zinnia, Balsam, Amaranth, Nasturtian, Thunbergia, French, Marigold, etc., which, if properly cared for, will bloom in the winter, make your window shelves beautiful and cost nothing.

How to Grow Fine Pansies.

As pansy seed should be sown here during September and October, we will now proceed to give the promised directions for planting and cultivating, so as to secure large and abundant blooms.

The pansy is perfectly hardy here in the Low Country or Coast Region of the South Atlantic States, and may be sown in the open ground, on properly prepared soil, any time during the fall, but the earlier the better, provided extreme heat and drought be not prevailing at the time. It is well to make several sowings at different times during September and October. Though they require no protection against frost, something may be gained in earliness of blooming by planting some in pots or boxes, and giving them, on the approach of cold weather, the advantage of a cold frame, a moderate hot bed, or a warm room in the house. Whether planted in boxes or in the open ground, the seed bed should be prepared so as to be light and sandy. From this they can be transplanted to where they are to grow, so soon as they shall be large enough to handle.

Two things, as Mr. Dreer truly says, are absolutely necessary in the growing of

fine Pansies, first, to secure *good, reliable seed,* without which all your efforts will be unavailing; the other is to give them the best of cultivation. The soil to grow them in must be a rich compost of decomposed cow manure, leaf mould, and good garden loam, or sods well rotted. The plants, when coming into bloom, must be frequently watered with clear liquid manure, which can be made of a solution of Peruvian Guano or stable manure with water, well stirred up, and allowed to settle before using, observing not to make it too strong, as a weak solution frequently applied will be the most beneficial.

By the foregoing direction, as fine pansies can be grown here in the open ground as any Northern florist can show in his green-house. This has been demonstrated again and again by us and by others.

Hale's Early Peach.

This is a comparatively new variety, which, being very early, handsome, and of good quality, seemed to promise to introduce a new era into peach growing. In some parts of the country it has fully redeemed all the promises made for it, while in others, it has been a source of great disappointment and loss, on account of the rotting of the fruit. Our own experience with it is too limited to be of much value, being confined to a single tree in our garden. On this tree, the fruit has been almost entirely free from rot—less affected than that of other varieties growing near it, instead of more—and, what is more remarkable, perhaps, has suffered little from the curculio, which has destroyed nearly all the fruit on the other trees. So far, Hale's Early is a success with us, but it can not be recommended without previous experiment, for extensive planting. [*See Frontispiece.*]

Seasonable Orchard and Garden Notes.

Flower Seeds for Fall Sowing.

Many failures are made in Southern flower gardening by sowing in the spring (according to directions in the catalogues) seeds which in our climate must always be sown in the fall to ensure success. Most of the perennials and biennials, as well as some of the annuals, are of this class. A few of the most desirable are: Snapdragon, (*Antirrinum,*) Columbine, (*Aquiligia,*) Sweet Alyssum, Candytuff, Caliopsis, Catchfly, Clarkia, Nemophilla, Petunia, Larkspur, Erysimum, Pink, Mourning Bridge, (*Scabiosa,*) Stock Hollyhock, Sweet Pea, Mignonette, (in pots for winter blooming,) Gaillardia and Pansy. We may sow also, in pots of prepared soil, Calcealoria, Cineraria, Mimulus, and Chinese, Primrose, for winter blooming house plants. The seed should be sown in September, in pots prepared in the following manner: the pot to be half filled with drainage, over that, the rough sifting of the mould, and the surface covered with soil as fine as possible, half of which shoold be composed of river sand. When prepared thus, it should

be watered with a fine rose, immediately after which sow the seed carefully, without any covering of soil. The pots should then be placed under a close frame or hand-glass, in a shady part of the garden, no artificial heat being required. When the plants have made sufficient growth—say an inch—they must be transplanted into small pots filled with similar soil and kept as before; and they must afterwards be several times re-potted, as their growth may require more room.

How to Kill Nut-Grass—on Paper.

Our friend of the New York *Weekly Sun* not only reiterates his assertion that "thorough cultivation will eradicate nut-grass," but adds:

We have the testimony of more than one Southern farmer to prove that even what we of the North would call very moderate cultivation, will completely eradicate this pest from the most congenial soils of the South. We will say, in addition, that there is no species of plant known to live in the United States that cannot be readily killed by uprooting it, or even cutting off the foliage three or four times during the growing season.

We have hitherto supposed that we knew something about nut-grass, having it under our eye every day in our vegetable garden, (to say nothing of experience with it on the farm,) and uprooting it and cutting it off with the hoe, not three or four times merely during the growing season, but more than a dozen—we think we might safely say more than twenty times, in some cases, without making any progress toward eradicating it by that means; but we begin to think that we, in common with Southern farmers generally, are sadly behind the times in the art of killing nut-grass, (on paper,) and shall be obliged to take a few lessons in New York. Will one of the "more than one Southern farmers," who have found it so easy, "by what we at the North would call very moderate cultivation, to completely eradicate this pest from the most congenial soils of the South," please enlighten his brother agriculturists on this important subject?

What is Pear Blight?

Recent investigations, the New York *Tribune* says, not only by some of our ablest scientific men, but by leading horticulturists as well, have proved beyond the shadow of a doubt, that the pear blight is caused by a species of fungi which enters the minute openings in the bark and subsequently spreads around the trunk or branch, eventually strangling the life out of that portion beyond the diseased locality. Some species of fungi are increased by the seed-like bodies entering the roots, and after germination working their way up into the tree itself, but in the blight it attacks the limb or body which quickly shows its baneful presence.

The use of Collodion in Horticulture.

The *Gazette des Compagnes* recommends to dip the extremities of the slip in collodion, containing twice as much of cotton as the ordinary material used in photography. Let the first coat dry and then dip again. After planting the slip, the development of the roots will take place very promptly. This method is said to be particularly efficacious in woody slips, Geranium, Fuchia and similar plants.

Applied Chemistry and Mineralogy.

All communications and notes of inquiry intended for this Department, as well as specimens of soils, fertilizers and minerals for analysis or description, should be addressed to Charles U. Shepard, Jr., M. D., No. 20 Broad street, Charleston, S. C.

Manures.—II.

STABLE MANURE—DR. EMIL WOLFF.—(*Continued.*)

4. The various agricultural domestic animals produce under average circumstances, as is well known, stable manure of dissimilar quality and quantity. These differences depend on the physical condition of the manure of the various kinds of animals; on the manner of feeding them, and the different methods of using the manure, and on the amount of water voluntarily consumed by the animals. The last condition, with one and the same kind of stock, is subject to fluctuation according to the character of fodder consumed, the greater or less admixture of salt, the prevalent atmospheric temperature, and the habit of the animal. Without entering upon a minute consideration of these differences, attention may be called to the following points:

a. *Cattle manure*, especially that of cows, which is produced almost everywhere in the greatest quantity. Milch cows consume with ordinary winter fodder four pounds of water for every pound of dry food. When fed on slump* and beets, or during summer on almost exclusively green fodder, the proportion of water reaches six pounds and even more, for every pound of dry substance in the fodder. The quantity of water entering into the production of milk, with the aqueous vapor expelled through the lungs and skin, is of course a very considerable amount, being on the average one-third of that drank. It is nevertheless evident that the excrement and especially the urine of the cow must have a correspondingly watery consistence, and consequently the liquid manure is liable to escape into the drain and cistern, except where the litter is abundant. Young cattle, and especially full grown oxen, consume rather less water, on an average three or four pounds for each pound of dry fodder. But this water passes more completely (*i. e.* to the extent of 5-6 or 4-5) into their excretions, so that in both cases the quantity of water in the fresh stall-manure is about the same, the amount of litter remaining equal. Cow-manure is comparatively cold; that is, when heaped up and kept, it becomes heated less rapidly and strongly than other kinds of manure. The decomposition and putrifaction of cow-manure, or its conversion into assimilable plant-food, takes place rather slowly under ordinary circumstances. Hence its action on vegetation is less energetic and slower, and extends equally over three or four years. This property of cow-manure depends on the slight concentration of the urine of the same animal, as also on the watery and pasty consistence and fine mechanical sub-

* Potato or molasses slump, the residue after fermentation and the distillation of the spirit.

division of the excrement. The dung packs readily into masses that render difficult its equal distribution over the field and through the soil. It contains, also, an abundance of slimy and gummy substances that delay, especially when dry, the penetration of air and moisture, and consequently the process of decomposition. Occasionally lumps are formed which may be found years afterward, in the soil in a semi-carbonized condition. Fodder rich in nitrogen tends to mitigate these disadvantages, and to improve the general activity of cow-manure.

b *Horse manure* is termed heating or "hot," on account of the quick decomposition of its organic matter. In consequence of this activity, the temperature of the manure heap is frequently considerably raised, necessitating the exercise of great care to prevent any loss of valuable ingredients and products of decomposition. The heating character of horse-manure depends partly upon its physical, partly upon its chemical properties. The solid excrement of the horse forms a loose, slightly compact mass, since the food of this animal usually consists of quite large quantities of crude fodder and, in addition, oats (whose chaff is rich in woody fibre), and is not subjected to the grinding process of ruminants, which converts a large part of the woody fibre into a soluble and digestible form.

The porous nature of horse-manure promotes a rapid evaporation of dampness, and easier penetration for atmospheric air, and thus induces a more energetic decomposition of its organic matter. The last process is additionally hastened by the usually great concentration of the horse-urine; this being quite rich in nitrogenous organic substances, and especially subject to chemical decomposition, thereby acting as a ferment on the ingredients of the dung. As is well known, ammoniacal odors are often freely generated in horse-stalls, as also in sheep-pens, indicating a rapid decomposition of the dung. The formation of them should therefore be prevented in every possible way by a rational system of agriculture.

c. *Sheep-manure* ranks next to horse-manure in the rapidity of its decomposition and, hence, also in its action on vegetation. It is true that the excrement of sheep form a more compact mass than that of the horse, as the woody fibre and other undigested ingredients, being more finely disintegrated, enter into a more complete mechanical mixture.

On the other hand, the solid excrement of the sheep is less watery than that of cattle, and the urine is concentrated like that of the horse, so that the whole forms, with the litter-straw, a mass looser and less liable to ball than the manure of cattle. Sheep consume in their fodder and drink far less water than cattle; on an average, two pounds for every pound of dry substance in the fodder, and often by exclusive feeding on hay and straw still less. The respiration and perspiration, however, carry off more moisture than is the case with animals of greater size and weight. The fresh sheep-manure possesses greater dryness, and contains 33 to 36 p. c. dry substance; that of horses about 30 p. c., and that of cattle 25 per cent.

d. *Hog-manure* is quite variously estimated by the farmer, and has a very different composition, according to the food of the animal. The dung is not as pasty in consistence as that of cattle, and crumbles on partial drying, but its absolute weight is small because of the general digestibility of the food, and the urine is, usually,

very watery. The large amount of water in the urine prevails, however, only where the food consists of potatoes, beets, whey, swill and other similar food, rich in water and poor in nitrogenous ingredients. On the other hand, when fattened on food rich in nitrogen and phosphoric acid, as legumes, oil-cake, malt, &c., the urine of this animal is much more effective, and the whole manure frequently exerts an activity as beneficial, and often quicker than that of other descriptions of live stock.

5. Hitherto the consideration of stable-manure has been confined to its fresh condition. But the daily distribution of fresh manure on the field becomes desirable and practicable under certain circumstances only. Where the soil is clayey, and the climate raw and wet, this method may be advantageous, as it will produce the greatest loosening, drying and warming effects in the soil. Again, if the treatment of the manure-heap is careless and improvident, it is better to scatter it at once on the fields; but there is no excuse for such carelessness. Rational agriculture aims to produce a homogeneous article, capable of easy distribution in the soil, which, exerting an equally beneficial influence on vegetation through three or four years, would be for an intensive cultivation of the land, much preferable to manure in its fresh condition when it is full of straw.

The system almost exclusively pursued in Germany, consists in collecting the manure, in open air, on the heaps, for a period of two or three months, sometimes longer, with special attention to the following points:

a. The original strength, *i. e.*, the entire amount of plant-food present in the manure, must be preserved, and under certain circumstances even increased.

b. The manure should have throughout a homogeneous quality.

c. The volume and weight of the manure should not suffer any considerable diminution.

The last consideration is important, as a decrease in volume detracts materially from the loosening and warming effects of stable-manure in the soil, besides diminishing very considerably the fertilizing force of the entire mass; as then far less, really, of the liquid-manure and the plant-food dissolved in it, are absorbed and retained, (unless soil be added,) thus, producing a kind of compost.

The best method of constructing manure-heaps and pits cannot be described here. They should, however, be so constructed that none of the liquid-manure can escape into the earth, and the liquid often collecting in the deeper layers of the pile, may readily flow into a drain connected with the manure-heap. The above requirements of a rational treatment of manure can only be met by:

a. Retaining the urine as completely as possible in the stable-manure produced, and b. simultaneously creating a slow and regular process of fermentation and decomposition in the manure.

Stable-manure should be used in its entirety, that is including all the urine. The tank for the latter should be so placed that the urine, as fresh as possible, may be pumped directly and frequently on to the manure-heaps, as only thus can the stable-manure retain the largest amount of the valuable liquid-manure, or thus become equally saturated with moisture, besides allowing the excessive liquor to flow off into its appropriate and separate tank. There should be, therefore, two

entirely separate drains or tanks for the liquid-manure; one of which receives that flowing from the stalls, the other that from the manure-heap. The latter, which has filtered through the manure-heap, and been drawn off from its deeper layers, possesses a comparatively small amount of solid ingredients. Its composition has been determined by analysis to average: In 1000 parts liquor,

Dry Substance.	Mineral Matter.	Nitrogen.	Potash.	Lime.	Magnesia.	Phosphoric Acid.	Sulphuric Acid.	Silicic Acid.
18.0	10.7	1.5	4.9	0.3	0.4	0.1	0.7	0.2

The preservation of a constant, and at all seasons equal amount of moisture in the manure-heap, promotes a slow and regular process of fermentation. To this end it is also necessary to heap up the manure in tolerably equal layers throughout all parts of the pile; to mix thoroughly the possibly different kinds of manure, or to divide it in as similar piles as possible, and to pack solidly the whole. Where the so-called heating manures (as those of the sheep, and, especially, of the horse,) have been collected and kept in distinct piles for a long time, it is recommended to keep them well saturated with moisture, as also in their fresh and tolerably dry condition, by pouring upon them cow liquid-manure, or where that fails, water. By this means rapid decomposition is delayed, and all loss of valuable fertilizing substance is prevented, which would otherwise ensue. The amount of water is, then, equal to that in cattle-manure, viz., 75 p. c.

6. Where the fermentation of the stable-manure proceeds slowly and properly, it suffers no considerable loss in weight and volume during a period of two or three months—the time necessary to reduce it to an uniformly rotten condition, especially where the entire mass has been frequently moistened. This loss averages 1-6 to 1-5 of the weight and volume of the entire fresh manure, and hence the amount of rotten manure can be estimated from the known quantities of fodder and litter. This decrease is due to the decomposition of organic matter and the evaporation of water. A portion of the organic matter disappears, from the formation of carbonic acid, water and ammonia, (or in other cases, nitric acid.) Heat liberated from the interior of the pile, promotes the rapid evaporation of moisture. The total amount of fixed or mineral matter remains intact where lixiviation of the manure is carefully prevented. Carbonic acid produced by the decomposition of the organic matter escapes in a gaseous form; but ammonia and nitric acid, which are formed simultaneously, are mostly retained. Hence, the loss in the original amount of nitrogen is less than that of carbon, and the result of the fermentation is, that the stable-manure (the amount of moisture remaining the same) has a higher per centage of mineral ingredients and chemically combined nitrogen, and a smaller percentage of organic substance. Its mineral ingredients and nitrogen being wholly retained, and the manure suffering a diminution of 1-5 its absolute

weight, (the amount of water remaining the same, viz: 75 per cent.,) its average composition is as follows:

	Dry Substance.	Mineral Matter.	Nitrogen.	Potash.	Lime.	Magnesia.	Phosphoric Acid.	Sulphuric Acid.	Silicic Acid.
	p. c	*p. c.*	*p. c.*	*p. c.*	*p. c.*	*p. c.*	*p. c.*	*p. c.*	*p. c.*
Fresh manure.....	25.0	3 81	0.44	0.52	0.38	0.10	0.18	0.18	0.86
Manure moderately fermented.	25.0	4.76	0 55	0.65	0.48	0.13	0.23	0.23	1.08

The above composition of fresh manure is based on the average of analytical results. The total amount of mineral matter in old and fermented manure is frequently higher than in the fresh article; this increase being largely due to the accidental admixture of two or three per cent. sand and earth.

7. Large heaps of stable-manure suffer only inconsiderable loss in their valuable ingredients, when the decomposition is gradually and properly conducted, while the total manure becomes better adapted for application, its action quicker and more uniform, and its original force undiminished. But the case is altered where the process of decay proceeds too rapidly, or is continued too long. This occurs when the manure is exposed for a half or a whole year to the action of air and heat, and its weight and volume are, consequently, reduced to one half, or even more. Keeping it in small heaps for a long period induces a considerable loss of nitrogen and mineral matter, which can only be prevented by the addition of certain substances that either delay the process of decomposition, or retain the valuable ingredients, (as ammonia, potash and phosphoric acid,) and thus counteract the volatilization and lixiviation of the more fertilizing components.

Wherever manure must be kept longer than two or three months in the open air or under the cattle, it pays the farmer to make use of such substances. The simplest material for this purpose is a sandy loam or humous earth, spread in thin layers over the manure during its collection. Marl, powdered peat, finely ground land-plaster, as also alkaline salts and refuse, when accessible, are likewise valuable. One or two parts by weight of land-plaster or the other substances mentioned, to 100 parts manure, preserve it in a wonderful manner, by retarding the decomposition of the organic matter and preserving, nearly intact, the original fertilizing force. Land-plaster is also a capital means of preventing the rapid production of ammonia, and hence the volatilization of nitrogen. It is well, therefore, to scatter daily some land plaster in the horse and sheep stalls.

In subsequent papers other topics, connected with this important subject of domestic manures, will be presented, and an opportunity will be afforded to publish some original investigations as supplementary to the compilation of the opinions of the best authorities. These original investigations will have direct reference to the crops and agricultural system of the South. S.

Laboratory for Analytical Chemistry, No. 20 Broad st., Charleston, S. C.

Natural History Applied to Agriculture.

Specimens of insects, securely packed, (according to instructions given in The Rural Carolinian, for October, 1870,) with letters of inquiry, entomological notes, etc., should be addressed, (post paid,) to Mr. Charles R. Dodge, Washington, D. C.

The Trap-Door Spider.

A fine specimen of this wonderful spider, together with a perfect nest, in the soil in which it was formed, was received during the summer from Mr. M. B. Wever, of Edgefield County, S. C., and proved of such scientific interest that after examination it was handed over to the United States Department of Agriculture to be placed in its museum. The nest is about four or five inches deep, is silk-like in texture, and is so closely united to the soil that it seems a part of it. The most singular feature of the nest, which measures about an inch in diameter, is a tight fitting lid or trap-door, composed of the same material as the walls of the nest, but very much thicker and parchment like, and united for a space of three-quarters of an inch on one side, in a straight line, forming, a perfect working hinge. The mouth is turned outward to receive the lid, so that when the nest is closed not the slightest appearance of an opening can be detected.

Mr. Wever states, in his letter, that "the spider was found about the first of February, on an elevated piece of ground near my house, six miles east of Edgefield village, the county seat of Edgefield County, on the head waters of Turkey Creek, on my farm, twenty-five miles north of Augusta, Ga, near Johnson's Depot, Charlotte, Columbia and Augusta Railroad. I took the spider from the ground only a short time before it was shipped. It feeds only at night. A few years ago I had a mate to this; the hole was built under the pillar of my house. In visiting the nest at night I have found the spider absent on two or three occasions, but always at home during the day."

For a number of days the specimen remained on our table in a glass globe, such as is used for goldfish, the top being covered with gauze, and during all that time, though closely watched, the spider made no attempt to raise the lid or trap-door. That such was not the case during the night we easily demonstrated by placing a number of large flies in the globe every evening. In the morning the flies were always found to have disappeared, which would indicate that the animal is night-feeding in habits. On one occasion a cicada, or harvest-fly, and a grasshopper were placed in the globe, but neither were touched, so, doubtless, the spider confines his diet to "small game."

Desiring to make the acquaintance of our prisoner, on several occasions we attempted to open the door, or lid, but, this was held down so tightly by the spider by means of its strong claws, that we had to give it up; finally, however, a pair of long forceps were carefully inserted under the lid, which was then easily pryed open, the spider, meanwhile, retreating in haste to the bottom of the burrow, from which place it could only be coaxed by again closing the nest. Once, and once only,

it was brought to view by means of a twig thrust down after it, into the bottom of the nest. This the spider seized with its jaws in a very savage manner, and held on long enough to be fairly dragged out of the hole, instantly retreating, however, so that only a brief opportunity was given for observations as to size, color, etc. The experiment was repeated, but the spider always let go of the twig as soon as it was brought to the top of the burrow. It was judged to be about two inches long, and of a dark brown color, the legs and head, together with the jaws, (which were unusually large and strong,) appearing quite black.

This spider resembles so closely in habits, nest, etc., the trap-door spider of the West Indies, that at first doubts were expressed as to its having come from South Carolina, until Mr. Wever's second letter was received, an extract of which we have given above.

The spider of the West Indies first digs a cylindrical burrow with its jointed fangs and mandibles, from four to ten inches in depth, and about one inch in diameter: the bottom is rounded, and the top, which is level with the surface of the earth, is closed by a circular lid, continuous with the tube for about a third of its circumference, and this part may be called the hinge. The mouth of the tube is commonly dilated a little, so as to form a slightly recurved brim or lip, and the lid is sometimes a little convex internally so as to fall more accurately into the mouth and close it. Thus, we see that the two nests agree very closely, and the singularity is, that such a nest, or a pair of them, should be found as far North as the State of South Carolina, which makes it, in considering the subject of geographical distribution, of far greater value than a mere specimen of Natural History.

Answers to Correspondents.

Blood-sucking Cone-nose.—W. D. G., Beaufort County, S. C. The two live insects found in your house, on the bedding, and forwarded by you for name, came in good order, *alive*, though we soon chloroformed them to prevent a practical illustration of their mode of injury. The insect belongs to a family of predaceous *Hemiptera*, (true bugs), the *Reduviidæ*—insects, provided with a horny beak or rostrum, which serves the double purpose of piercer and sucker, and is known in the South as a very troublesome insect, from its habit of inflicting severe wounds by means of its piercer, in the human skin. It produces high swelling and severe pain. It is known as the *Conorhisius sanguisugus*.

Tortoise Beetles.—R. B. N., Palmetto, S. C. The insect you send for name, etc., and which you state was found on a cotton plant, belongs to the *Cassidæ*, or tortoise-beetles, as they are called, from their shape, and because the fore-part of the semicircular thorax generally projects over the head like the front of a helmet.

The larvæ are broad, oval flattened grubs, having a row of stiff prickles, or spines around the edges of the body; it also has a long forked tail, which serves to hold its excrement when voided. This is turned up over the back and serves to protect the insect from the sun as well as from its enemies. The insects are found

most commonly, and in great abundance upon the leaves of the various species of Convolvulus, such as the morning glory and sweet potato vine. The insect eats in both the larval and perfect states. As you only saw one specimen in your cotton field, there is little danger of their doing any perceptible injury, if they eat the cotton leaves at all.

"An Ugly Insect."—J. H. G. Graniteville, S. C. The "curious and ugly specimen of an insect" forwarded by you for name was received. It is an aquatic insect in the larval state, feeding upon other insects on the bottom of the pools or streams it inhabits, and when mature is nearly three inches in length; it then changes to the pupa, climbs up on some reed or stem of aquatic plant and again changes to the perfect insect. The specimen sent was a male, which is distinguished by its long smooth jaws, often an inch and a half in length: the jaws of the female are quite small. The eggs are deposited upon reeds overhanging water, so that the larvæ upon hatching may find ready access to their proper element. It is known in the West as the Hellgrammite fly, and scientifically is designated as *Corydalis Cornutus.*

Notes on our Native Flora.—I.

Our Southern fields and forests teem with an abundant vegetation, in great variety and profusion. I propose in this and some following papers, to offer a few notes on our native herbaceous plants, both annual and perennial, indicating such as have useful qualities, or that may be ornamental and worthy of cultivation.

Some few which are really attractive in the woods, bear removal to a garden soil with ill grace, and seem to languish in a state of vegetable dyspepsia, but most plants are vastly improved by the change. Many of the finest flowers of our choice collections are improved races from native European stock, much inferior to ours. To those who have a taste for gardening and the pleasant recreation it affords, we would recommend the introduction of the native wild plants within their reach to garden culture, as an experiment promising fruitful results.

1. May Apple—Wild Jalap—Mandrake, (*Podophyllum peltatum.*)

A low perennial-rooted herb, growing in rich shaded woods, the naked stem a foot or more high, terminated by two large peltate leaves and a large white flower in the forks. As seen in patches in the woods, it attracts attention by the rich luxuriance of its foliage, in contrast with the delicate white flowers. The root has strong medicinal qualities as a cathartic.

2. Great Water Lily, (*Nelumbium luteum.*)

An aquatic herb, growing in still waters, with large circular, peltate floating leaves, one to two feet wide, and pale yellow flowers, five to six inches wide. The leaf and flower stalks spring from a large rhizoma or creeping root, and adapt their length to the depth of the water, always floating on the surface. The fruit

is an enlarged top-shaped receptacle, in the upper cavities of which the hard, roundish, olive-colored nuts are embedded; a curious and interesting thing. Old Peter Collinson, the botanist and Quaker friend of John Bartram, writing from London, in 1760, to his friend, says: "This reminds me of the Water Lily that is in the Jerseys. Does it occupy such a depth of water, that the roots can't be come at? Thou art ambitious of plants from us; but here is the most charming plant of Asia, including China and Egypt, in thy neighborhood; and yet so little is thy curiosity or industry, that thou can'st not avail thyself of so great a curiosity. * * Prithee, John, never more let me reproach thy want of taste and curiosity in this article."

3. Water Nymph—White Water Lily, (*Nymphæa odorata.*)

Another charming aquatic, with large orbicular floating leaves and white fragrant flowers, three to four inches wide. Like those of the *Nelumbium*, the flower and leaf stalks grow to such a length as to float on the surface. When growing on boggy grounds, the stalks are shorter.

4. Yellow Water Lily, (*Nuphar advena.*)

This is also a pretty aquatic, not unlike No. 3, found in still waters, with large yellow flowers.

These three last named plants, though called lilies, have no natural affinity to the true lily family, and are entirely different in their structure. They are all large and strong plants, and require ponds or deep water for cultivation. For the aquarium, there are two others called aquatics, of smaller and more delicate habits, viz: *Cabomba Caroliniana*, with small oblong or linear leaves and white flowers, and *Brasenia peltata*, the *water shield*, with small oval leaves and purple flowers, which are well adapted to the purpose.

5. Side-saddle-flower—Pitcher Plant—(*Sarracenia.*)

There are six species of this curious plant, native to the South—four with redish purple, and two with yellow flowers. They are chiefly attractive for their peculiar hollow, trumpet-shaped leaves, hooded at the top, and their curiously constructed flowers. They are found mostly in wet soils. The roots have medicinal qualities, and have been much used as a tonic.

6. Puccoon Root—Blood Root—(*Sanguinaria Canadensis.*)

This delicate little harbinger of approaching Spring, puts forth its small kidney-shaped leaves, and pure white flowers, as early as February or March; grows in rich, shaded soils. The roots have strong medicinal qualities.

7. Dutchman's Breeches,—*Dicentra cucullaria.*)

A small but showy plant, with compound leaves, and nodding racemes of whitish, spurred and crested flowers, more common North, and only reaching us by the mountain region.

8. Hearts-ease—Violet—(*Viola.*)

Our native violets, of which we have fourteen (14) species, are all early bloomers, and give the first flowers of Spring. Some have pale blue or purple flowers, others white, and three of them yellow. The common English Hearts-ease or Pansy, (*V. tricolor,*) is almost naturalized, and springs up around gardens very readily from seed.

9. Fly-Trap—(*Dionæa muscipula.*)

This curious and interesting plant seems to be restricted to the sandy bays in the pine woods of lower North Carolina and the adjacent portions of this State. It is remarkable for its spreading spathulate leaves, with rounded limbs, which are fringed on the margin with strong sensitive bristles. These bristles, on the slightest touch, close inwards, and strongly clasp insects or any other light bodies.

10. St. John's-wort—(*Hypericum.*)

The Hypericums are mostly shrubby herbs, with bright, showy, yellow flowers. Of the nineteen Southern species, there are several quite attractive. Of these, perhaps, *H. fasciculatum* is the finest, with its diffuse, leafy habit, and profusion of bright yellow flowers.

11. Spring Beauty—(*Claytonia*)

Small smooth herbs, with two opposite leaves, and stems terminated by racemes of rose-colored flowers. Two species, both confined to the mountains.

12. Catch-Fly—(*Silene.*)

Many of the Silenes are handsome plants, with erect clusters of red and scarlet-fringed flowers, and equal to the cultivated kinds.

13. Corn-Cockle—(*Agostemma Githago.*)

An introduced species, sometimes found about old settlements and pastures, with pink or rose-colored flowers.

14. Callirrhoe.

Most of the malvaceous plants have large and ornamental flowers. We have three species of this, with purple and rose-colored flowers.

15. Hibiscus.

Another genus of malvaceous plants, of which we have seven Southern species of herbaceous habits, and two of woody growth in Florida. One of these in South Florida, is a large tree. They all have large showy flowers, and should be more generally introduced into cultivation.

16. Cranes-bill—(*Geranium maculatum.*)

A pretty delicate plant, growing in rich open woods, about one or two feet high, with purple flowers and blotched leaves.

17. Touch-me-not—Jewel-weed—(*Impatiens.*)

The balsams are represented in our native flora by two species, both with yellow and orange spotted flowers.

H. W. RAVENEL.

Aiken, S. C.

Mining and the Mechanic Arts.

The Findlay Iron Works, Macon, Ga.

The "Findlay Iron Works," of Macon, Ga., were first established in 1839, by Mr. Robert Findlay, father of the present proprietors. Like most new enterprises, it was commenced on a small scale, in a wooden structure, horse power being used for propelling the machinery of the establishment. The business was prosperous, increasing year after year, until 1852, when it was found necessary to enlarge the capacity of the establishment, which was done by the erection of the present extensive work shops. They were fully supplied with the most approved machinery, in use, for the manufacture of stationary steam engines, saw mills, mill gearing, and for the execution of first-class foundry and machine work generally.

Mr. Robert Findlay, the enterprising founder of the works, died in 1859, when his sons, the present proprietors, succeeded to their management, they being at that time co-partners with their father. The business was continued with marked success until the commencement of the late war between the Northern and Southern States.

Soon after the breaking out of the war, the Confederate States Government seeing the magnitude of the "Findlay Iron Works," and the great advantages they would afford to the cause, determined upon leasing the entire works, which was done at an early day. The whole establishment was promptly converted into a manufacturing arsenal, ranking second in capacity in the Confederate States. An immense amount of ordnance and ordnance supplies were turned out daily by the four or five hundred workmen who were kept at work day and night.

The Messrs. Findlay, after leasing their establishment to the Confederate Government, being young men, and anxious to vindicate a cause which was dear to their hearts, repaired to the field, and remained in active service to the end of the conflict.

The close of the war found them almost penniless, with their business broken up —their numerous customers having transferred their patronage, from necessity, to other establishments, whose proprietors were enabled to remain at home during the struggle. Besides, the Federal Government took possession of their large interest, and held it for a long time after the war as captured property. Not in the least daunted by past misfortunes, and being possessed of that true manly courage which never succumbs to adversity, the Messrs. Findlay, in 1869, without capital, relying solely upon their personal efforts and their past record, re-established their business on quite a small scale. By perseverance, energy and industry, they were not long in working up the "Findlay Iron Works" to their ante bellum capacity. They gathered around them new friends, and the business went on improving year after year, until now they employ upwards of a hundred skilled workmen in the several departments of their works.

The general business of the establishment, as before said, is the manufacture and building of steam engines, saw mills and machinery, and castings of all descriptions. These works, like similar establishments elsewhere, have their specialties. The proprietors, for several years past, have been manufacturing the well known "Eclipse Screw Cotton Press," and the "Craig Horse Power" for driving cotton gins. Both of these machines are widely known, and have obtained a high reputation among cotton planters. They are shipped by the Messrs. Findlay in large numbers every year, to all the cotton States—from North Carolina to Texas.

As few of the readers of the RURAL CAROLINIAN have a proper conception of the magnitude of the "Findlay Iron Works," whose name has become as familiar to them as "household words," we will give a brief sketch of their extent, and the area of ground they occupy. The entire establishment covers about three acres of ground in the midst of the flourishing city of Macon. The buildings are constructed of brick, with iron roofs. The main building, which is used as a machine shop, pattern making shop, boiler and blacksmith shop, cotton gin factory, etc., is 325 feet in length by 50 feet in width. The foundry department is an isolated building, 200 feet in length by 100 feet in width. It is supplied with all the modern facilities, enabling the proprietors to execute any orders in that line. A single story brick building, 330 feet long by 40 feet in width, running at right angles to the main building, is used for putting up the "Eclipse Cotton Press." There are several other buildings connected with the establishment, which are used for offices, store-rooms, etc. The entire works are furnished with machinery and tools of the most approved kinds and patterns, adapted to every style of work in the metals and wood.

The front end of the main building is surmounted with an immense flag-staff, from which floats a flag fifty feet in length, displaying the name of "Findlay's Iron Works," in large letters. Instead of ringing a bell to summon the workmen, as is the general custom, the establishment is provided with a mammoth steam gong of three distinct tones. The mellow sounds of the gong can be distinctly heard from fifteen to twenty miles around the adjacent country. The proprietors deem both the flag and the gong as good local advertisements. We place great reliance in their good judgment in such matters, as they are liberal and judicious advertisers, which is, in truth, the basis of their success in business.

The Messrs. Findlay are preparing to add to their already extensive works, a new department, to be devoted exclusively to the manufacture of ornamental cast-iron work, including the finer styles of railing, lawn chairs, settees, crestings, vases, urns, and statuary for parks, gardens, etc. They purpose furnishing work in this line at reasonable prices, thus enabling parties to supply themselves at home, instead of sending abroad for such articles, as is too often the case.

We have devoted considerable space to our hastily written description of the "Findlay Iron Works," because we deem the energetic proprietors eminently worthy of a place among the public benefactors of the South. We hope they will continue to receive that substantial encouragement which their public spirit and past record entitles them to.

Charleston—Her Commercial Prosperity—A Bright Future.

We look back with amazement at the advance Charleston has made in commercial prosperity in the past eight years. In the early part of 1865, a cheap class of "irregular" army officers were swaggering in wonton authority in a desolated city, whose docks were filled up, houses deserted, and ruin in full view on its once most opulent streets. The geographical advantages of Charleston, however, soon overcame all obstacles. Cotton was wagoned from forty to eighty miles, and then put on the railroad, that it might find its real value here; and tonnage forced its way to our port, to carry it abroad. We say forced its way, because an enterprising steamship Captain, finding on his arrival that no dock was available, made one for himself, by driving his ship, head on, under full steam, through the soft mud, and saved himself the trouble of putting out lines, by securely fastening his vessel in the mud alongside the wharf.

Under such discouraging circumstances, it is not strange that the 500,000 bales of cotton receipts of 1859–'60 were started at 112,000 bales in 1865–'66. But, with the reconstruction of material things, even under the disabilities of *political* reconstruction, Charleston has been slowly and surely GROWING STRONG, until, at this time, the close of the eighth cotton year since the termination of the war, we can look around on a great prosperity in all things pertaining to her general welfare. We have lived through the doubts of capitalists, who, fearing to invest in Charleston, put out hundreds of thousands in neighboring cities, and now repent themselves at their leisure, as the quarterly returns mark the quarterly decrease of income. In the meantime, great railroad kings have projected and built new lines to divert business from Charleston, and for a long time it was threatened that cotton would turn off from its accustomed route, and seek new markets, from Columbia and Augusta, away from the "City by the Sea." Subsequent events prove that all the efforts of the "mighty railroad kings" have failed in their designs, as the cotton receipts of Charleston for the year closing on the 31st August, show more than one thousand bales per day, including fifty-two Sundays. Compared with the great crop year of 1870, Charleston is the only port that *gains relatively* in crop figures.

All this prosperity comes from the steady endeavor, and willing, patriotic co-operation of comparatively a few people, whose business capital, intelligence and good management, have invited stately ships from remote seas, and built up coastwise facilities in advance of all other South Atlantic ports. Our railroads, too, have been an important auxiliary in bringing about this healthy increase of trade to our port. Their several managements have evinced a ready willingness to co-operate with the merchant in all matters that look to placing Charleston in the position nature has designed her to occupy among the commercial ports of the South—second only to New Orleans.

To fully substantiate what we have said concerning the increase in the export

trade of Charleston the past year, we will give the figures of some of the leading articles. To foreign ports during the year just closed, England has taken direct 118,000 bales of cotton and 60,000 barrels of naval stores; France, 20,000 bales of cotton; North of Europe, 16,000 bales of cotton; Spain, 10,000 bales of cotton —showing an increase of 50,000 bales to foreign ports as compared with the previous year. The coastwise steamship lines have likewise done a large business, even through the ordinarily dull summer months, showing grand totals of 16,000 bales to Boston, 22,000 to Philadelphia, 11,000 to Baltimore, and 170,000 to New York, while the previous year's figures present only 2,600 bales to Boston, 14,000 to Philadelphia, 9,000 to Baltimore, and 133,000 to New York—showing an increase in exports to coastwise ports this year, as compared with the preceding year, of upwards of 50,000 bales.

In naval stores the comparison is equally as striking in its increase. The exports to coastwise ports the past year have been 135,000 barrels, against 70,000 barrels the previous year. The exports to foreign ports also show an excess. This branch of our export trade shows a large increase from year to year. A number of new stills have been erected on the lines of our railroads, and new lands are constantly being opened to the business. The day is not far distant when Charleston will supersede Wilmington in the naval stores business, and become the leading market on this continent for its sale and shipment. At any rate, her steady and marked advancement in the trade the past three or four years, coupled with her natural advantages as a seaport, justify such a conclusion.

In rice, there has been a considerable increase in exportation, amounting to some 5,000 or 6,000 tierces, while the demand for home consumption has increased in about the same ratio. The producers of this cereal have realized a profitable season, as it has maintained a good price throughout.

The lumber trade, like every other branch of business, exhibits a marked increase the past year, the exports to both foreign and domestic ports showing an excess of upwards of 2,000,000 feet over the preceding year. As new timber lands in the vicinity of Charleston are being opened, together with the development of the vast country of untouched timber lands along the line of the Port Royal Railroad, the product of which will seek Charleston as a market and a port of shipment during the season of the year when the fear of malarial fevers will prevent vessels from visiting Port Royal and its adjacent waters, we can confidently look for a considerable increase in this branch of trade the coming year.

The demand for phosphate rock has kept pace with all other branches of trade. Notwithstanding we are not in possession of the exact figures representing the foreign and domestic export of the crude rock, yet we are fully justified in saying there has been a considerable increase in the business, over previous years. This increase, too, has been sustained in the face of an advance of 25 per cent. in the price, and a larger advance in the rates of freight. Three new mining companies are in the course of formation, whose facilities will most probably meet the anticipated increased demand the approaching season. Those now engaged in its mining find it difficult to obtain sufficient labor to meet the demands on them

Should this difficulty continue, coupled with the high rates of wages exacted, a still further advance in the price of the article must be looked for.

In the manufactured article, there has been a corresponding increase over former years. Each of the six companies engaged in the preparation of the crude rock as a fertilizer, have been taxed to their utmost capacity to supply the demands on them. In some cases, we are credibly informed, orders were declined in consequence of their inability to fill them. All the companies have been busily engaged during the summer, in overhauling their works and making such additions and improvements as will enable them to meet all requirements in the future. They have also been engaged in the preparation and manufacture of their various fertilizers, and have made such progress in this respect as will warrant us in saying they will be able to fill all orders promptly the coming season.

While the shipping and commission merchants have been busily engaged in their various branches of business and exhibiting increased figures, our wholesale merchants on Hayne and Meeting streets, and East Bay, have not been quiet "lookers on" at the bustle going on in other marts of trade. They, too, exhibit a large and healthy increase in their figures, ranging through all departments. The most marked improvement in the wholesale trade of the city, the past year, has been in the grocery business, which, with all other branches, is steadily on the increase each succeeding year.

Our truck farmers also claim a good share in the increased trade of Charleston. At one time it was feared they would meet with heavy losses, on account of the then unpropitious season. But Providence smiled upon their efforts, and through a favorable change of season, although somewhat later than usual, they have been enabled to make large shipments, realizing good prices therefor. We are pleased at being able to record these facts, as the truck business of our city has become an important item. It is mainly conducted by persons of limited means, and affords employment to a large class of needy and industrious people.

A retrospective view of the entire business of Charleston during the commercial year ending on the 31st August, aggregating as it does nearly seventy-five millions dollars, is encouraging indeed, and should stimulate every one to press forward with all the energy and determination nature has endowed them with, until Charleston attains her proper position among the commercial marts of the country. No city on this Continent, or elsewhere, can present a more honorable class of men engaged in mercantile pursuits than Charleston can. Our banks, too, are conducted by men of acknowledged ability and unblemished integrity.

In anticipation of a still further increase in the business for 1873–'74—by no means an unreasonable expectation, for the business shows an increase every year for the past eight years—we would refer to the complete arrangements now making to meet the coming tide of prosperity. Messrs. James Adger & Co. have two steamers on the line to Boston, equal in capacity to 5,000 bales of cotton per month. On the New York route, there are several first-class steamships, of from 1,250 to 2,500 bales capacity each, represented by Messrs. Wagner, Huger & Co., Wm. A. Courtenay and James Adger & Co., which can move 1,000 bales of cotton per day, and

even 50 per cent. more if required. The "Clyde Line" to Philadelphia and thence to Providence, and all the New England mills, can move from 6,000 to 8,000 bales a month. The attention of cotton shippers has been attracted to this line, because there is no cartage between the wharf in Charleston and the most distant cotton mill on the Penobscot River in New England. The Baltimore line, represented by P. C. Trenholm, has also a capacity of at least 5,000 bales a month. Thus it appears, that in domestic steamship transportation alone, Charleston can move upwards of 50,000 bales of cotton a month.

Our railroad officials have not been idle in this important particular. They have been busily engaged in increasing their facilities of transportation, both to and from Charleston, and are prepared to offer such facilities to shippers as will meet all requirements.

Closely allied to ships and shipping, is the important matter of cotton presses. Ships that have loaded at Mobile and New Orleans, find they gain largely in bales when loaded at Charleston, owing to the powerful presses we have at work, 10 and 12 per cent. in many instances having been secured; an advantage which the ship-owner fixes his eye on quickly, and always afterwards gives a kindly look at offer of charter from Charleston.

With all the facts before them, every candid observer must admit that Charleston is yearly gaining ground as a commercial mart and a leading seaport. Let us hear no more croaking, but let every well-wisher of the "City by the Sea" put his shoulder to the wheel, and push forward the car of progress, until it reaches the desired goal.

Patrons of Husbandry and Agricultural Societies.

Union County Granges in Council.

The delegates from the County Granges met at the Court House, on the 1st Saturday in August, according to adjournment.

Bro. G. D. Peake, P. M., was called to preside. The Grange opened in due form, and began work. All the Granges in the County were represented, and we had an interesting discussion upon various agricultural topics, in a free and easy manner, eliciting much useful information, and drawing us nearer together as a brotherhood.

The reports upon the condition of the crops pretty generally coincided.

Too much rain in the Spring; the grass had been very troublesome; labor had been unreliable, and the crop had suffered from it.

The wheat crop had proved almost a dead failure—chargeable to the severity of the winter, excessive rains, a late frost, and cloudy, rainy and stormy weather when the plant was in bloom.

The oat crop was above an average, but not sufficient to supply the demand.

The corn crop very deficient; the lowlands have been flooded again and again, and the uplands have been cut off by bad cultivation, and a drought which has been pretty general during the month of July.

Cotton is two weeks later than it was at this time last year, but where the plant has been well cultivated it is doing well, and very fully fruited. Where the grass has been troublesome the stand is bad and the plants inferior. It is not believed that under the most favorable circumstances the yield can exceed that of last year.

Fertilizers.—There are complaints against some of the fertilizers, and a general belief seems to obtain of adulteration.

A committee, consisting of a member from each Grange in the country, was appointed to report fully upon the subject of fertilizers at the next meeting. Facts will be carefully collected and made public. The farmers have determined to protect themselves against imposition if possible.

A committee was appointed to report at the next meeting on that *questio vexata* labor, and a resolution passed requesting a member to read an essay on some agricultural subject at the next meeting.

A very interesting discussion sprung up on the grasses, in which a majority seemed to coincide on the uncertainty of clover, the valuable properties of Bermuda as a grazing grass, and the indestructibility of nut grass and Egyptian grass.

The intercourse was harmonious, and enlivened by pleasant repartees, anecdotes and illustrations. The entertainment was concluded by the enjoyment of a lunch, which reflected no little credit upon the Patronesses of Husbandry. ***.

New Granges in South Carolina.

LAURENS C. H., S. C., August 4th, 1873.

EDITOR OF THE RURAL CAROLINIAN: Please add the following to list of Granges in this State:

No. 128, Eureka, Fort Motte P. O.; S. T. Hollman, M.; D. P. Fogle, Secretary.

No. 129, Reidville, Reidville P. O.; J. S. Drummond, M.; W. A. Harrison, Secretary.

No. 130, Thickety, Brown's Store P. O.; J. W. Tench, M.; J. W. McLure, Secretary.

No. 131, Pacolet, Pacolet Depot P. O.; J. F. Sloan, M.; R. E. Kerr, Secretary.

No. 132, Cane Creek, Columbia P. O.; W. H. Stack, M.; Thos. Sligh, Secretary.

No. 133, Maybinton, Lyles' Ford P. O.; W. D. Hardy, M.; J. T. Bynum, Secretary.

JNO. A. BARKSDALE,
Lecturer State Grange.

Number of Granges in the Southern States.

Alabama, 22; Arkansas, 26; Georgia, 86; Louisiana, 11; Mississippi, 202; North Carolina, 41; South Carolina, 133; Tennessee, 66; Texas, 3; Virginia, 3.

Corrections.

The Post office of Saluda Grange, No. 22, is Greenwood, and not Cokesbury, as printed in August number.

The W. M. of Plowden's Mill Grange, No. 65, is A. J. Tindall, not Tendall.

The W. M. of Fair Forest Grange, No. 79, is Dr. C. J. Murphy; Secretary, G. D. Peake.

The Post-office of Cane Creek Grange, No. 90, is Santuc, not Santee.

Santuc Grange, No. 89, is reported as defunct.

The W. M. of Aiken Grange, No. 123, is H. W. Ravenel; Secretary, Alfred Holmes.

State Grange of North Carolina.

Master, W. S. Battle, Edgecombe; Overseer, Columbus Mills, Cabarrus; Lecturer, J. S. Long, Craven; Steward, E. C. Davidson, Mecklenburg; Assistant Steward, A. J. Galloway, Wayne; Chaplain, J. W. Hall, Rowan: Treasurer, T. L. Vail, Mecklenburg; Secretary, G. W. Lawrence, Cumberland; Gatekeeper, J. M. Campbell, Moore; Ceres, Mrs. W. S. Battle; Pomona, Mrs. S. A. Mills; Flora, Mrs. E. C. Davidson; Lady Assistant Steward, Mrs. A. T. Mial.

Subordinate Granges in North Carolina.

No.	*Name of Grange.*	*Master.*	*Secretary.*	*Postoffice.*
1	Greensboro',	J. A. Weatherly,	J. W. Albright,	Greensboro'.
2	McLeansville,	W. P. Wharton,	R. C. Rankin,	McLeanville.
3	Salisbury,	J. W. Hall,	T. W. Keen,	Salisbury.
4	Poplar Tent,	Columbus Mills,	Jas. Erwin,	Concord.
5	Concord,	J. McDonald,	Jas. C. Gibson,	Concord.
6	Charlotte,	T. L. Vail,	A. H. Martin,	Charlotte.
7	Lemly,	E. C. Davidson,	B. W. Withers.	Charlotte.
8	Providence,	E. C. Grier,	W. F. Kaykendall,	Providence, Mecklenburg Co.
9	Mallard Creek,	R. L. D'Armond,	W. B. Bradford,	Charlotte.
10	Steel Creek,	J. M. Strong,	T. S. Cooper,	Charlotte.
11	Long Creek,	Wm. Caldwell.	D. F. Dixon,	Hopewell, Mecklenburg.
12	Statesville,	P. C. Carlton,	C. A. Carlton,	Statesville.
13	Wilmington,	Geo. Z. French,	I. C. Mawa,	Wilmington.
14	Lumberton.	Berry Godwin,	Norment,	Lumberton.
15	Fayetteville,	G. W. Lawrence,	M. J. McSween,	Fayetteville.
16	Jonesboro',	J. M. Campbell,	R. N. Bryan,	Jonesboro'.
17	Raleigh,	A. T. Mial,	N. P. Jones,	Raleigh.
18	Newberne,	J. S. Long,	J. E. Nash,	Newberne.
19	Kingston,	Jas. T. Askew,	Jas. Wilson,	Kinston.
20	Goldsboro',	A. J. Gallaway,	J. F. Davis,	Goldsboro'.
21	Wilson,	B. H. Barden,	R. W. King,	Wilson.
22	Panola,	Wm. S. Battle,	Jno. S. Dancy,	Tarboro'.
23	Mooresville,	Chas. R. Jones,	E. R. McNeely,	Mooresville, Iredell County.
24	Granite Hill,	J. W. A. Kerr.	E. R. McNeely,	Granite Hill, Iredell County.

The foregoing is a list of the Granges organized by Worthy General Deputy D. Wyatt Aiken, and intended for our last issue. The number has since been increased to over forty, but we have no official returns from the later organizations.

Miscellaneous Correspondence and Notices.

Notes on the Season and Crops—The Brooks Press.

Editor of the Rural Carolinian. Ought a man to be excused for postponing the fulfilment of a promise? I ask the above question, because from time to time I have promised to give you a notice of the crops in this section of the country—cotton, corn, etc.

Cotton.—The season from the commencement has been against the King; too cold and too wet. The weed has been forced by constant rains, and unless we have dry weather to allow the fruit to form, I am certain that not a half crop will be made.

Corn.—Corn is rather better, but still not a full crop. The fodder (blades) is nearly lost. The potatoes are running to vines.

Grass.—Persons may talk of clover, or any grass you please to import, but if crab-grass can't beat them all, I am no judge. Let me ask—may not this grass, which is now a curse, be so improved by selection and cultivation as to be made useful?

The Best Press.—Permit me, sir, to add a few words with regard to farming facilities. Without fear of successful contradiction, I assert that the Brooks Press is superior to any in use. It is easily put up, and that, too, under the lint room and out of the weather. Not the least of its advantages, is that one man, without help, by lengthening the lever, can pack a bale of from four hundred and fifty to five hundred pounds. This press is made and sold by J. M. Eason & Brother, of Charleston.

Cotton Gin.—No better cotton gin is made than the Morris, of Columbia. With it I have ginned out fifteen hundred pounds of seed cotton in a little more than two-and-a-half hours. It was done with a power formerly made by Messrs. Lockwood & Johnston. I think Mr. McLeish has one or two of them for sale, worth having.

H. P.

Early Branch, S. C., August 13, 1873.

Cotton Seed and Phosphates.

Editor of the Rural Carolinian: I propose to figure up for the benefit of your readers "S. C.'s" ideas of progression in producing cotton and cotton seed from the use of acid or dissolved phosphates.

Assuming his premises to be correct, viz:

COST.	
One ton of dissolved phosphates	$35 00
Average cost of freight to plantation	5 00
One ton cotton seed on plantation	10 00
Total	$50 00

will give 4,000 pounds of good manure; enough to use on ten acres, at 400 pounds each, which should produce ten bales of clean lint cotton with a good season, and 10,000 pounds cotton seed say, five tons. Adding to this five tons of dissolved phosphates, gives him in the second year sufficient manure, at the same rate, the following season for fifty acres. Pursuing the same course he has the third year, 250 acres, and 1,250 acres the fourth year. Assuming that no planter would want to go beyond this acreage in cotton, the fifth year would give him 312½ tons of cotton seed to continue the cultivation of the 1,250 acres, and the 312½ tons of cotton seed to make 656 tons of manure in conjunction with acid phosphates, for other crops, viz: wheat, clover, oats, barley, turnips, potatoes, etc.

PLANTER.

The Crops in Mississippi—Stock and Lien Laws.

EDITOR OF THE RURAL CAROLINIAN: We have had fair seasons. Crop prospects, both corn and cotton, are good in this section. North, near Holly Springs, and South, near Vaiden, the corn crop promises to be short. Up to this time, the cotton prospect throughout the State is good. Our people plant less corn and more cotton year by year. Cheap transit for corn and wheat may yet make it our policy to grow cotton exclusively, labor now being money more than ever. Our Granges might effect millions by shaping legislation, particularly in passing stock laws. In the Northwestern States, where millions of pounds of meat are raised, they find it cheaper to fence stock in than to fence it out. With the continued neglect of our fences, and the millions to be saved by abandoning them altogether, I think the time has come for us to remodel our stock laws in the South. The change can only be wrought by the agricultural papers shaping public opinion to that effect. The great lever power could be wielded through the Granges.

The *agricultural lien laws* throughout the South should be abolished. They have done all the good they were intended to do, if there was any in them;. and their only effect now is to demoralize our people, cause them to overtrade themselves, and from the uncertainty of payment, they are caused to pay too much,—that is to say, with this system it takes a greater proportion of the products of our country to pay for the products imported into it from the North and West.

W. A. HERRING.

Water Valley, Miss., July 31st, 1873.

Remedy for Colic in Horses.

EDITOR OF THE RURAL CAROLINIAN: Take one pint of hogs lard—melt it over a slow fire, and add soot from the chimney to make it of the consistency of cream; also two or three pods of red pepper; pour mixture in a bottle and drench in the usual way. If the horse is not relieved in fifteen or twenty minutes, repeat the dose. I have given this to a great many horses, and have never known it to fail, if given in time. There are many valuable remedies, but the difficulty is, generally, that the ingredients cannot be obtained on a plantation; but this one can always be obtained. If no lard can be had, a pint of grease from fat bacon will answer.

SMALL FARMER.

Darlington, S. C.

Prof. Mussa and Tuomy's Geology—a Correction.

EDITOR OF THE RURAL CAROLINIAN: Prof. Holmes, in his work on the Phosphatic Deposits of South Carolina, quotes Tuomy's Geology as follows:

"Whatever of organic matter the plant contains must be in the soil."

This is either a misquotation or a misprint. The original reads thus:

"Whatever of *in*organic matter the plant contains must be in the soil."

One of Prof. Mussa's "antiquated blunders" is thus shown to have been merely a slip of the pen or of the types, which the proof-reader failed to correct.

W. D. WAMER.

Laboratory for Analytical Chemistry, No. 20 Broad street, Charleston, S. C.

Turpentine and Kerosene Liniment.

EDITOR OF THE RURAL CAROLINIAN: A cheap and valuable liniment for man or beast. Mix equal parts of spirits turpentine and kerosene oil, put in a bottle and it is ready for use. It relieves sore throat, cuts or bruises, swellings, rheumatic pains, and, in fact, almost every description of pains or aches.

Darlington, S. C. SMALL FARMER.

Inquiries and Answers.

"A Reader," Tylersville, S. C.—1. Peach pits or stones should at once be packed in moist sand, in boxes or in a hole in the ground, and thus exposed to the weather till February or March, when they should be planted on rich, well manured soil, in nursery rows three feet apart, scattering them pretty thickly in the drills, and covering four or five inches in depth. If they come up too thick, thin out, so that they may not retard each other's growth. It is not necessary to crack the nut. Keep the bed mellow and free from grass and weeds. 2. Your strawberry bed should be prepared at once. If the ground is already rich, apply no stable manure, but dig in a heavy dressing of leaf mould, or other decayed vegetable matter, and wood ashes. A light top dressing of guano or super-phosphate may be given the bed after planting, and another in January or February. The ground must be broken up very deeply, and the bed made friable and smooth. Plant in September, if you have the plants at hand and the weather be favorable, but if the plants are to be sent from a distance, it is better to wait till October or the first of November, as plants cannot be safely shipped during hot weather. Plant in rows two feet apart, setting the plants fifteen inches apart in the row. Keep the bed clean and mellow. Mulch between the rows and close around the plants, before they begin to bear, and keep the runners cut off.

———S. F. O., Fort Motte, S. C.—1. You can get Lucerne seed from any of the large seed dealers of the North—B. K. Bliss & Sons, New York, for instance—and probably from Frank W. Johnson, Atlanta, Ga. 2. It takes from eight to ten pounds per acre, depending upon the mode of planting. 3. Sow in September, if practicable, but October will do in your latitude. 4. See note on another page, "Timely Farm and Plantation Topics." Almost any soil will grow it, however, if rich, deep and well drained. 5. Manure well with stable manure, and add ground bones or super-phosphate from two to four hundred pounds per acre. 6. It is not very good for hay, the stems being hard and wiry when dry.

———L. H. T., Mandarin, Fla., wishes to know which is the best variety of the cow-pea for general cultivation, and asks, "Is there anything better than the black-eyed white pea?" Will some experienced planter answer. We know of no analysis of the cow-pea. Our chemists should take it in hand. L. H. T. also asks if our correspondent at Biscayne Bay can give an analysis of the rocks he mentions.

———"Subscriber," Abbeville, S. C. The best millet for green forage is the cat-tail or Egyptian. It must be drilled and cultivated to give satisfactory results. German millet or Hungarian grass may be sown broadcast on rich land and cut for green forage or made into tolerable hay. The time for sowing both is in the spring. We are not sure what you mean by "annual crimson clover." If you mean scarlet clover, (sometimes called crimson clover,) see note on another page. The late Wm. N. White, of Athens, Ga., recommended this clover very highly. We are sorry to say that we have no personal knowledge of it.

———W. F., Oak Grove, S. C. The secret of keeping Irish potatoes during the winter lies in equalizing the temperature. They must be kept entirely free from frost, or they will, of course, be destroyed, but at the same time they must be kept cool, or they will sprout badly. We pack them in dry sand, in barrels or boxes and keep them in a store-room, or in some secure out-building.

———F. E. M., Greenville, S. C. We think it would be a good plan to plant strawberries between two rows of your Scuppernong vineyard, provided you do not plant within three or four feet of the vines nor continue the crop longer than three years.

———J. McC., Stevenson, Ala. You can get the Scuppernong vines for planting from C. C. Langdon & Co., Mobile, Ala. The Scuppernong does not grow from cuttings, under the ordinary conditions of planting, and is propagated exclusively by layering.

E. M. G, Lincoln, Ala. Lime should not be mixed with stable or lot manure, but is an excellent application to swamp muck and leaves, grass, or other vegetable trash, in which it promotes decomposition and adds to their value as fertilizers.

———E. S., Mannville, S. C. The "Bud Worms" sent by you reached us in such a condition that they were not recognizable. All insects for name and description should be sent directly to Charles R. Dodge, our Entomologist, Washington, D. C.

———"Tekel," Fort Motte, S. C. The grass sent by you is *Cyperus erythrorhizos* and must be a tough grass to survive such a name. It belongs to the same genus as the common nut-grass. We should think it rather coarse for hay.

General Notices and Acknowledgments.

This number closes our fourth volume, and if any one should fail to fully appreciate the value of the twelve numbers which compose it, we need only ask him to glance at the full and carefully prepared index herewith presented. He will see there how wide is the scope of our discussions, and how numerous are the topics treated. Without detriment to our proverbial modesty, and without counting for much our own contributions, we think we may justly claim that this volume contains an amount of useful information and valuable suggestion, seldom compressed into the same space, and no where else to be bought for many times the amount of our annual subscription.

We are not in the habit of making magnificent promises for the future, preferring to allow the past to be taken as a guarantee of what may be reasonably expected of us; but with a stronger array of contributors than ever before, with the experience of the last four years to guide us, and with an increasing faith in agricultural and general progress, we may reasonably hope to make the next volume even better than the one now closed.

Our enterprising and energetic neighbors of the *News and Courier*, seem determined to show the slow-going old fogies of the press what it means to publish, a live newspaper at the present day, and we congratulate them on the effectiveness of their practical lesson. With their new dress of clear and beautiful type, and their new press, capable of making seven thousand impressions an hour, they have the material elements essential to their work. Brains, editorial skill and experience, and business tact, will do the rest, and we greatly mistake the present wants and tastes of our people, if such qualities be not appreciated and such efforts rewarded. We wish the *News and Courier* the fullest measure of the success it merits.

We crave the indulgence of the ladies, and all other readers of our Literary and Home Department, on account of the curtailment of the space usually given to it. The pressure from other quarters has been so great that we were compelled to succumb to it, but will try to make amends in future numbers. The interests of the planter's family are more important than even the yield of cotton and corn.

That our coast and sea island region is admirably adapted to the growth of pears has been frequently demonstrated, and among others by our friend, Robert Chisolm, Esq., of Chisolm's Island, whose greatest trouble with his standard trees, he tells us, is their tendency to overbear and the difficulty of thinning out the crop. Thanks for the fruit. The Gray Doyennes were particularly good.

We hope every reader of the RURAL CAROLINIAN has carefully and thoughtfully studied "Low Middling's" "Notes on Planting." We are sure they have been worth more than the price of subscription to our monthly, even to the most experienced planter, while to the novice, they have furnished an invaluable fund of information. We shall conclude the series in our next number.

No one has a better right to a hearing in defence of Agricultural Colleges than "Old Granby," and he shall have it; but we are compelled to let his article lie over till our next number. The writer should, however, have given weight to his practical illustrations by affixing his well known and honored name to his communication.

Our contributors have been exceedingly generous of late, and we offer our best thanks to one and all, but are compelled to ask the indulgence of those for whose favors we have not yet been able to find room. Several very interesting and valuable communications are necessarily reserved for future numbers.

Literature, Science and Home Interests.

MY LESBIA.

From Catullus V.

My Lesbia, let us live and love,
And all the old men's scandal,
We'll value at its real worth—
A rush—or farthing candle.

The setting sun again shall rise
His course eternal keeping;
Our short day o'er, we enter one
Perpetual night for sleeping.

Give me a thousand kisses love,
And then—why give an hundred;
Then add a little thousand more,
And yet another hundred:

Then—why another thousand, sweet,
And still another hundred;
And let us many thousands make
Ere our clinging lips be sundered.

Then if the score should rise too high,
We'll lose it in confusion,
Lest at the total we, amazed,
Should blame our sweet profusion—

Lest any evil minded spy
Should see how great our bliss is,
And envy us the soft delights
Of such a heap of kisses. Y.

Charleston, S. C., July 15th, 1873.

A STORY OF MYSELF.

PART II.

I was glad that Laura shut herself up for a few days; I dreaded to see her just now. I suffered from an inexplicable feeling of pride and disappointment, and did not care to have her discover it. Laura, like myself, sometimes chose to protect herself against neighborly invasions. We never kept our doors locked in the country; the sending in of a card was an unknown process there. Our acquaintances walked in upon us whenever the whim took them, and it now and then happened to be an inconvenience to us who loved an occasional fit of solitude. I determined to keep indoors for a few days also. Whenever I was in an unquiet mood I took to industry; so that day I set about arranging my drawers, making over my ribbons, and turning my room upside down. I re-hung all my pictures, and moved my bottles and boxes. Then I mended my stockings, and marked my clothes, which was not a necessary piece of work, as I never left home. I next attacked the parlor—washed all the vases, changed the places of the furniture, and distressed my mother very much. When evening came, I brushed my hair a good deal, and looked at my hands, and went to bed early. I could not read then, though I often took books from the shelves, and I would not think.

Sunday came round. The church bells made me lonesome. I looked out of the window many times that day, and, fixing on the sash one of my father's ship-glasses, swept the sea, and peered at the islands on the other side of the bay, gazing through their openings beyond which I could see the great dim ocean. Mother came home from church, and said young Maurice was there, and enquired about me. He hoped I did not take cold. His friend Redmond had been hoarse ever since our ride, and passed most of the time in his own room, drumming on the window pane and whistling dirges. Mother dropped her acute eyes on me, while she was telling me this; but I yawned all expression from my face.

As Monday night drew near, my numbness of feeling began to pass off; thought came into my brain by plunges. Now I desired; now I hoped. I dressed myself in black silk, and wore a cape of black Chantilly lace. I made my hair as glossy as possible, drew it down on my face, and put round my head a band composed of minute sticks of coral. When all was done, I took the candle and held it above my head and surveyed myself in the glass. I was very pale. The pupils of my eyes were dilated, as if I had received some impression that would not pass away. My lips had the redness of youth; their color was deepened by my paleness.

"How handsome I am?" I thought, as I set down the candle.

When I entered Laura's parlor, she came toward me and said:

"Artful creature! you know well, this warm night, that every girl of us would wear a light dress; so you wore a black one. How well you understand such matters! You are very clever, your real sensibility adds effect to your cleverness. I see how it is. Come into this corner. Have you got a fan? Good gracious! black; with gold spangles! where *do* you buy your things? I can tell you now," she continued, "my conversation on the bridge the other day."

She hesitated and asked me if I liked her new muslin. She did look well in it; it was a white fabric, with red rose-buds scattered over it. Her delicate face was shadowed by

light brown curls. She was attractive, and I told her so, and she began again,—

"Harry Lothrop said, as he was impaling the half of a worm,—

"'Redmond is a handsome fellow, is he not?'

"'He is too awfully thin,' I answered, 'but his eyes are good.'

"He gave me a crafty side-look, like that of a parrot when he means to bite your finger.

"'Your friend, too,' he added 'is really one of the most beautiful girls I ever saw—a coquette with a heart.'

"'Let down your line into the water,' I said.

"'He laughed a little laugh. By-the-by, there is an insidious tenacity about Mr. Harry Lothrop which irritates me; but I like him, for I think he understands women. I feel at ease with him, when he is not throwing out his tenacious feelers. Then he said,—

"'Redmond is engaged to his cousin. The girl's mother had the charge of him through his boyhood. She is ardently attached to him—the mother, I mean. She is most anxious to call Redmond her son.'

"'Didn't you have a bite,' I said.

"'Well, I think the bait *is* off the hook,' he answered; and then we were silent and pondered the water.

"There are some people I must speak to,"—and Laura moved away without looking at me.

I opened my fan, but felt chilly. A bustle near me caused me to raise my eyes; Redmond was speaking to a lady. He was in black, too, and very pale. He turned toward me and our eyes met. His expression agitated me so that I unconsciously rose to my feet and warned him off with my fan; but he seemed rooted to the spot. Laura took care of us both; she came and stood between us. I saw her look at him so mournfully, that he understood her in a moment. He shook his head and walked abruptly into another room. Laura went again from me without giving me a look. Maurice came up and I made room for him beside me. We talked of the riding-party, and then of our first meeting at the ball. He told me that Redmond's boat had arrived, and what a famous boat it was, and "what jolly sprees we fellows had, cruising about with her." I asked him about his guitar, and when we might hear him play. He grew more chatty and began to tell about his sister, when Redmond and Harry Lothrop came over to us, which ended his chat.

The party was like all parties,—dull at first, and brighter as it grew late. The old ladies played whist in one room, and the younger part of the company were in another. Champagne was not a prevalent drink in our village, but it happened that we had some that night.

"It may be a singular beverage," said an old lady near me, "but, it is good."

Redmond opened a bottle for me, we clinked glasses, and drank to an indefinite, silent wish.

"One more," he asked, "and let us change glasses."

Presently a cloud of delicate warmth spread over my brain, and gave me courage to seek and meet his glance. There must have been an expression of irresolution in my face, for he looked at me inquiringly and then his own face grew very sad. I felt awkward from my intuition of his opinion of my mood, when he relieved me by saying something about Shelley—a copy of whose poems lay on a table near. From Shelley he went to his boat, and said he hoped to have some pleasant excursions with Laura and myself. He "would go at once and talk with Laura's mother about them." I watched him through the door while he spoke to her. She was in a low chair, and he leaned his face on one hand close to hers. I saw that his natural expression was one of tranquility and courage. He was not more than twenty-two, but the firmness of the lines about his mouth belied his youth.

"He has a wonderful face," I thought, "and just as wonderful a will."

I felt my own will rise as I looked at him—a will that should make me mistress of myself, powerful enough to contend with, and resist, or turn to advantage any controlling fate which might come near me.

"Do you feel like singing?" Harry Lothrop inquired. "Do you know Byron's song, 'One struggle more and I am free?'"

"Oh, yes!" I replied, "it is set to music which suits my voice. I will sing it."

Laura had been playing polkas with great spirit. Since the champagne the old ladies had closed their games of whist far talking, and, as it was nearly time to go, the company was gay. There was laughing and talking when I began, but silence soon after, for the wine made my voice husky and effective. I sang as if deeply moved.

"Lor'!" I heard Maurice say to Laura, as I rose from the piano, "what a girl! she's really tragic!"

I caught Harry Lothrop's eye as I passed through the door to go up stairs; it was burning—I felt as if a hot coal had dropped on me. Maurice ran into the hall and sprang upon the stair-railing to ask if he might be my escort home. That night he serenaded me. He was a good-hearted cheerful creature; conceited, as small men are apt to be—conceit answering for size with them—but pleasantly so, and I learned to like him as much as Redmond did.

The summer days were passing. We had all sorts of parties—parties in houses and out-of-doors; we rode and sailed and walked. Laura walked and talked much with Harry Lothrop. We did not often see each other

alone, but when we met, were more serious and affectionate with each other. We did not speak, except in a general way, of Redmond and Harry Lothrop. I did not avoid Redmond, nor did I seek him. We had many a serious conversation in public, as well as many a gay one; but I had never met him alone since the night we rode through the pines.

He went away for a fortnight. On the day of his return he came to see me. He looked so glad when I entered the room that I could not help feeling a wild thrill. I went up to him, but said nothing. He held out both his hands. I retreated. An angry feeling rushed into my heart.

"No," I said. "Whose hand did you hold last?"

He turned deadly pale.

"That of the woman I am going to marry."

I smiled to hide the trembling of my lips, offered my hand to him; *but he waived it away*, and fell back on his chair, hurriedly drawing his handkerchief across his face. I saw that he was very faint, and stood against the door, waiting for him to recover.

"More than I have played the woman and the fool before you."

"Yes."

"I thought so. You seem experienced."

"Forgive me," he said, gently; "being only a man, I think you can. Good God!" he exclaimed, "what an immense self-possession you show!"

"Redmond, is it not time to end this? The summer has been a long one—has it not?—long enough for me to have learned what it is to live. Our positions are reversed since we have been acquainted. I am for the first time forgetting self, and you for the first time remembering self. Redmond you are a noble man. You have a steadfast soul. Do not be shaken. I am not like you; I am not simple or single-hearted. But I imitate you. Now come, I beg you will go."

"Certainly, I will. I have little to say."

August had nearly gone when Maurice told me they were about to leave. Laura said we must prepare for retrospection and the fall sewing.

"Well, I said, "the future looks gloomy and I must have some new dresses."

Maurice came to see me one morning in a state of excitement to say we were all going to Bird Island to spend the day, dine at the lighthouse, and sail home by moonlight. Fifteen of the party were going down by the sloop Sapphire, and Redmond had begged him to ask if Laura and I would go in his boat.

"Do go," said Maurice; it will be our last excursion together; next week we are off. I am broken-hearted about it. I shall never be so happy again. I have actually whimpered once or twice. You should hear Redmond whistle now-a-days. Harry pulls his mustache and laughs his oily laughs, but he is sorry to go, and kicks his clothes about awfully. By the way, he is going down in the sloop because Miss Fairfax is going—he says—that tall young lady with crinkled hair; he hates her, and hopes to see her sick. May I come for you in the morning by ten o'clock? Redmond will be waiting on the wharf."

"Tell Redmond," I answered, "that I will go; and will you ask Harry Lothrop not to engage himself for all the reels to Miss Fairfax?"

He promised to fulfill my message, and went off in high spirits. I wondered, as I saw him going down the walk, why it was that I felt so much more natural and friendly with him than with either of his friends. I often talked confidentially to him; he knew how I loved my mother; and how I admired my father, and I told him all about my brother's business. He also knew what I liked best to eat and to wear. In return, he confided his family secrets to me. I knew his tastes and wishes. There was no common ground where I met Redmond and Harry Lothrop. There were two many topics between Redmond and myself to be avoided, for us to venture upon private or familiar conversation. Harry Lothrop was an accomplished, fastidious man of the world. I dreaded boring him, and so I said little. He was several years older than Redmond, and possessed more knowledge of men, women and books. Redmond had no acquirements, he knew enough by nature, and I never saw a person with more fascination of manner and voice.

The evening before the sailing-party, I had a melancholy fit. I was restless, and after dark I put my shawl over my head and went out to walk. I went up a lonesome road, beyond our house. On one side I heard the water washing against the shore with regularity, as if it were breathing. On the other side were meadows, where there were cows crunching the grass. A mile father was a low wood of oaks, through which ran a path. I determined to walk through that. The darkness and a sharp breeze which blew against me from limitless space made me feel as if I were the only human creature the elements could find to contend with. I turned down the little path into the deeper darkness of the wood, sat down on a heap of dried leaves, and began to cry.

"Mine is a miserable pride," was my thought—"that of arming myself with beauty and talent and going through the world conquering. Girls are ignorant till they are disappointed. The only knowledge men proffer us is the knowledge of the heart; it becomes us to profit by it. Redmond will marry that girl. He must and shall. I will empty the dust and ashes of my heart as soon as the fire goes down; that is, I think so;

but I know that I do not know myself. I have two natures,—one that acts, and one that is acted upon, and I cannot always separate the one from the other."

Something darkened the opening into the path. Two persons passed in slowly. I perceived the odor of violets, and felt that one of them must be Laura. Waiting till they passed beyond me, I rose and went home.

The next morning was clondy, and the sea was rough with a high wind; but we were old sailors and decided to go on our excursion. The sloop and Redmond's boat left the wharf at the same time. We expected to be several hours beating down to Bird Island, for the wind was ahead. Laura and I, muffled in cloaks, were placed on the thwarts and neglected; for Redmond and Maurice were busy with the boat. Laura was silent and looked ill. Redmond sat at the helm, and kept the boat up to the wind, which drove the hissing spray over us. The sloop hugged the shore, and did not feel the blast as we did. I slid along my seat to be near Redmond. He saw me coming, and put out his hand and drew me towards him, looking so kindly at me that I was melted. Trying to get at my handkerchief, which was in my dress pocket, my cloak flew open, the wind caught it, and as I rose to draw it closer, I nearly fell overboard. Redmond gave a spring to catch me, and the boat lost her headway. The sails flapped with a loud bang. Maurice swore, and we chopped about in the short sea.

"It is your destiny to have a scene, wherever you are," said Laura. "If I did not feel desperate, I should be frightened. But these green, crawling waves are so obaque, if we fall in, we shall not see ourselves drown."

"Courage! the boat is under way," Maurice cried out; we are nearly there."

And rounding a little point, we saw the lighthouse at last. The sloop anchored a quarter of a mile from the shore, and Redmond took off her party by instalments.

"What the deuce was the matter with you at one time?" asked Jack Parker. "We saw you were having a sort of convulsion. Our cap'n said you were bold chaps to be trifling with such a top-heavy-boat."

"Miss Denham," said Redmond, "thought she could steer the boat as well as I could, so the boat lost headway."

Harry Lothrop gave Redmond one of his soft smiles, and a vexed look passed over Redmond's face when he saw it.

We had to scramble over a low range of rocks to get to the shore. Redmond anchored his boat by one of them. Bird Island was a famous place for parties. It was a mile in extent. Not a creature was on it except the lighthouse keeper, his wife and daughter. The gulls made their nests in its rocky borders; their shrill cries, the incessant dashing of the waves on the ledges, and the creaking of the lanterns in the stone tower were all the sounds the family heard, except when they were invaded by some noisy party like ours. They were glad to see us. The lighthouse keeper went into the world only when it was necessary to buy stores, or when his wife and daughter wanted to pay a visit to the main land.

The house was of stone, one story high, with thick walls. The small, deep-set windows and the low ceilings, gave the rooms the air of a prison; but there was also an air of security about them: for, in looking from the narrow windows, one felt that the house was a steadfast ship in the circle of the turbulent sea, whose waves from every point seemed advancing toward it. A pale, coarse grass grew in the sand of the island. It was too feeble to resist the acrid breath of the ocean, so it shuddered perpetually, and bent landward, as if invoking the protection of its stepmother, the solid earth.

"It is perfect," said Redmond to me; "I have been looking for this spot all my life; I am ready to swear that I will never leave it."

We were sitting in a window, facing each other. He looked out toward the west, and presently was lost in thought. He folded his arms tightly across his breast, and his eyes were a hundred miles away. The sound of a fiddle in the long alley which led from the house to the tower broke his reverie.

"We shall be uproarious before we leave," I said; "we always are, when we come here."

The fun had already set in. Some of the girls had pinned up their dresses, and borrowed aprons from the lighthouse keeper's wife, and with scorched faces were helping her to make chowder and fry fish. Others were arranging the table, assisted by the men, who put the dishes in thr wrong places. Others were singing in the best room. One or two had brought novels along, and were reading them in corners. It was all merry and pleasant, but I felt quiet. Redmond entered into the spirit of the scene. I had never seen him so gay. He chatted with all the girls, interfering or helping as the case may be. Maurice brought his guitar, and had a group about him at the foot of the tower-stairs. He sung loud, but his voice seemed to fluctuate;—now it rang through the tower, now it was half overpowered by the roar of the sea. His poetical temperament led him to choose songs in harmony with the place, not to suit the company—melancholy words set to wild fitful chords, which rose and died away according to the skill of the player. I had gone near him, for his singing had attracted me.

"You are inspired," I said.

He nodded.

"You never sung so before."

"I feel old to-day," he answered, and he swept his hands across all the strings; "my ditties are done."

After dinner Laura asked me to go out with her. We slipped away unseen and went to the beach, and seated ourselves on a great rock whose outer side was lapped by the water. The sun had broken through the clouds, but shone luridly, giving the sea a leaden tint. The wind was going down. We had not been there long, when Redmond joined us. He asked us to go round the island in his boat. Laura declined, and said she would sit on the rock while we went, if I choose to go. I did choose to go, and he brought the boat to the rock. He hoisted the sail half up the mast, and we sailed close to the shore. It rose gradually along the east side of the island, and terminated in a bold ledge which curved into the sea. We ran inside the curve, where the water was nearly smooth. Redmond lowered the sail and the boat drifted toward the ledge, slowly. A tongue of land, covered with pale sedge, was on the left side. Above the ledge, at the right, we could see the tower of the lighthouse. Redmond tied down the helm, and, throwing himself beside me, leaned his head on his hand, and looked at me a long time without speaking. I listened to the water, which splashed faintly against the bows. He covered his face with his hands. I looked out seaward over the tongue of land; my heart quaked, like the grass which grew upon it. At last he rose, and I saw that he was crying, the tears rained fast.

"My soul is dying," he said in a stifled voice; "I'm not more than mortal, I cannot endure it."

I pointed toward the open sea, which loomed so vague in the distance.

"The future is like that, is it not? Courage! we must drift through it; we shall find something."

He stamped his foot on the deck.

"Women always talk so, but men are different. If there is a veil before us, we must tear it away, not sit muffled in its folds, and speculate on what is behind it. Rise."

I obeyed him. He held me firmly. We were face to face.

"Look at me."

I did. His eyes were blazing.

"Do you love me?"

"No."

He placed me on the bench, hoisted the sail, untied the helm, and we were soon plowing round to the spot where we had left Laura; but she was gone. On the rock where she was perched a solitary gull, which flew away with a scream as we approached.

That day was the last that I saw Redmond alone. He was at the party at Laura's house which took place the night before they left. We did not bid each other adieu.

The farmers of Lawrence, Kansas, met at that place recently in convention, and they formed a procession three miles long.

CAROLINA MILITARY INSTITUTE, CHARLOTTE, N. C.

The North Carolina Military Institute, formerly conducted by Gen. D. H. Hill, will be re-opened on *October 1st next*, under the above name, by Col. J. P. Thomas. The military feature will be adopted as a means of securing discipline, and of improving the physique of the cadet. It will not be allowed to preclude appeals to the moral sense, nor to infringe unduly upon the scholastic exercises of the Institute.

The course of instruction will embrace both scientific and classical studies. The effect will be to make the education of the Institute sound, thorough and practical, and to imbue the cadets with the highest moral sentiments.

We are very glad to be able to make this announcement, as we most heartily approve of the system of education usually denominated "military;" not merely because it makes soldiers of our young men, but because of the habits of order, discipline and confidence, which it forms in the cadet. It teaches him obedience, and the control of his will and passions when occupying a subordinate position, and at the same time gives him confidence and coolness when called to command others, or discharge any high duty. It teaches a young man to control himself and to command others. Regularity and punctuality are learned easily—the whole atmosphere of a Military Institute is pervaded with these virtues. And then the *justice* of the whole system is so admirable. Discriminations are avoided by the very nature of the government of the school—all cadets stand upon the same footing—the only grades, being those of merit and demerit. A young man's position is his own work the reward of his own labor. The esteem in which merit is held, and the disgrace attending demerit and consequent discharge, is stimulus enough to maintain a high order of discipline, and efficiency in study.

It has been our privilege to know Col. J. P. Thomas intimately for many years. From the time we received instruction from him in the old Citadel Academy, through the trials of the war, and amidst the greater trials and temptations which have come upon us since we have known him to be the same inflexible patriot and soldier of the right.

Reared under the discipline of the Citadel

Academy, selected from its graduates to maintain, as a Professor, the discipline and prestige of the Institution gradually rising in rank until placed in charge of the branch at Columbia, the Arsenal Academy, he cannot be else than competent to fill with credit his new position, and to perpetuate in his new school that high honor and respect which gave his Alma Mater such just pre-eminence.

General Hill, the old Superintendent of the Institution, which this succeeds, has earned a name for himself, which gives the coalition with Col. T. great strength. Col. T. has shown much wisdom in securing his assistance.

We honestly believe that Col. Thomas possesses, in an eminent degree, all the qualities necessary to discharge his new duties with fidelity to his cadets, and with honor to himself. In his hands the Carolina Military Institute cannot be other than a success, and it has our most hearty good wishes.

C. I. W.

Hygiene.

DRAINAGE AND HEALTH.*

Decaying organic matter is one of the conditions necessary to the production of autumnal fevers; either by evolving poisonous gases, or by forming a breeding bed for animalcules or vegetable germs. Under ordinary circumstances the quantity of leafy growth in and around infected localities would seem adequate to consume the noxious gases generated in the process of decay, and, doubtless, to a great extent the hypothesis is maintainable. But, conceding this, it is equally well assumed that other gases just as baneful to human health and life are generated at the same time, and being rejected by the epicurean foliage, disseminates itself on the breeze to vex and humble lordly man. To what extent this is true, and how far it is modified by the surroundings of animal and vegetable life, it is impossible, in the present state of observation, to decide.

The vegeto-animalcular hypothesis is more popular in the medical profession. It would be more correct, however, to confine the expression to the vegetable kingdom, since the lowest of the vegetable orders, called cryptogami, in their development, as far as understood, fulfil more of the morbific conditions than other alleged causes. These cryptogami are microscopic fungi that vegetate in myriadic numbers among the organic waste brought into decay by the moisture inherent to its situation, and the influence of solar heat. The northeast and southwest winds, particularly, are supposed to favor their development.

Whatever the cause may be, we are assured that these hurtful generations are propagated chiefly among upland marshes and the swampy low ground of our creeks and rivers, the lower swamps being formed for the most part, if not entirely, by obstructions in the proper water channels.

The conditions, then, auspicious to the production of malaria, are, first, organic matter favorably located, then heat and moisture to decompose it, and from its decay nourish into existence the morbific miasm, and finally suitable winds to convey and broadcast its subtle poison over the adjacent country.

It was deemed relevant to allude to these facts in a brief and general way as introductory to the consideration of means of diminishing our endemic diseases.

It has been said that the man who will discover a cheap and abundant substitute for the Peruvian bark and its principal alkaloid would be honored as a benefactor of his race. How much greater meed of praise, then, should be accorded to him who may devise sure means of prevention. The ambition of the writer, however, does not embrace such an exalted scope as definite means of prevention; and he does not consider his modesty impugned by attempting to devise some means of diminishing the evil.

Recognizing the annual prevalence of autumnal fevers among us, the attention of Patrons is called to some of the means calculated to diminish its propagation. Of these, drainage, thorough drainage, is mentioned as the most efficient.

During the whole decade from 1856 to 1866, there was not in this section, as many intermitting fevers as had occurred in the healthiest autumn month of the current decade. A broad assertion, but fully open to examination. The reason is believed to consist in the fact, that during the first part of that period, at least, our river, creek and swamp lands were well ditched, and the surface kept free from vegetable accumulations. As the war progressed, interest in this direction died out, and after its close, our demoralized farmers found themselves powerless to effect any improvement, or reclaim their rich alluvial lands. The ditches and drains, choked with decayed weeds, were filled up with washings from the hills, and our creeks and streams were more obstructed than ever before.

This being the physical condition of our section at the close of the war, is it a matter

*Some Thoughts on the Means of Diminishing the Prevalence of Malarial Disease. An Essay read before Saluda Grange, No. 22, P. of H.

of surprise that intermittent and remittent fevers, particularly the former, became epidemics in 1866, to say nothing of its *winter* manifestations in 1863, '64 and '65, and remained so for the succeeding four years. Since, however, from general improvement in farm operations and partial removal of some of the difficulties, there has been a manifest tendency in the disease to confine itself to localities friendly to its reign. This account is of course brief and imperfect, but speaks loudly as an argument for thorough drainage.

Defective, unscientific and often injudicious as our present system of drainage is, its influence in diminishing numerically, or in modifying miasmatic seizures, can be estimated only by comparison with those localities where the system is more deficient or more perfect. In a certain locality where correct records were kept, for the ten years preceding a regular and thorough system of drainage the yearly proportion of cases was nearly 25 in 100; and since that time, but 6 in 100 and its mortality reduced from 2 per cent. to less than ¼ of 1 per cent. But inestimable as was this improvement in the public health, the most palpable advantage was the increased profit to the farmer. Dr. Charles Wilson, speaking of the above locality in the British Quarterly Agriculturist, says: "Those who recollect the former swampy nature of the soil in our vicinity and of the extensive means which have been adopted for drainage, will, of course, have no difficulty in understanding why malaria was once so prevalent and under what agency it should *now have disappeared*; and will gratefully acknowledge the two fold value of those improvements which have at once rendered our homes more salubrious and our fields more fruitful." This is a strong case and commends itself to thinking farmers.

[*To be concluded in the next Number.*]

SANITARY VALUE OF FLOWERS.

I most cheerfully essay to aid the editor of *Hygiene* in his laudable inquiries on the Sanitary value of Flowers. The task is both pleasant and interesting.

I deem it proper to state *a priori* that as a practising physician from the class of 1846, Medical College, South Carolina, my labors and observations have been entirely confined to Colleton County, emphatically the malarious region of the State.

Popular opinion here is in favor of the healthfulness of the odor of many plants; in some instances, even those of well known poisonous properties, whose flowers emit an agreeable odor as the jessamine, poppy, etc., are regarded beneficent purifyers of the atmosphere, while those like the Jamestown weed (*Datura Stramonium*) which possess an offensive perfume are avoided and considered dangerous.

It is confidently believed that the odor of the pine, bay, dogwood, cherry, gardenia, sunflower, mock orange, (*Prunus Crolimana,*) cotton-poplar and cedar exerts an influence destructive in its effects upon that form of malaria which produces remittent and intermittent fevers.

I am not convinced that the cultivation of flowers, independent of other hygienic measures, does exempt an individual or community from the effects of malaria; but I am satisfied that the proximity of plants and flowers, to one's residence, as an auxiliary to drainage, ventilation, cleanliness, pure water and wholesome food, is a measure of such weighty importance that it should never be neglected in any instance where the object is the protection of the health either of the family or community.

I have under my care several private residences, surrounded by long leaf pines and a few gardenias, mock-oranges, etc., where the families, for the last twenty years, have enjoyed almost entire immunity from malarious diseases; hence it is my opinion, that even here in Colleton County, were we to locate our dwellings among the tall pines with a flower garden near the house, and exercise prudence with regard to diet, water, etc., as indicated above, our climate would be as free from disease as the Valley of the Yadkin, or the peaks of the Blue Ridge.

WM. M. SHULER, M. D.

August 12th, 1873.

FLORICULTURE AND HYGIENE.

In answer to the queries in the New York *Hygiene*, which I read in the RURAL CAROLINIAN, (a Journal which should be in the hands of every one, who feels an interest in agriculture,) I will state the following facts:

In August of 1866, I bought a small house in the upper part of Charleston, in a locality where fevers were of frequent occurrence; I at once set to work, drained as much as possible the lands around the house, and laid out the grounds for a flower garden. My friends warned me, and predicted that before the end of the year I would leave the locality on account of the prevailing fever. I did not mind them, but kept steadily improving my property.

During the winter I had planted a great many rose bushes, oleanders, shrubs, etc., as also a few fig and peach trees. In the spring, I planted a great many summer flowers, as well as lavender, mint, etc., and wherever a small space was left I planted sunflowers. The consequence was, that although several of my neighbors were down with fever, I escaped with my family entirely, and have not had a fever to this day. Several of my neighbors

have followed my plan, and the locality is now almost entirely healthy.

Here I would also state, that to escape from fever in the coast regions of South Carolina, it is also necessary to abstain entirely from pork or bacon. Hog meat does not suit for a hot climate, like ours, and the less we eat of it, the healthier we shall be. F. M.

Charleston, S. C., July 31, 1873.

NOTES AND MEMORANDA.

LITERARY NOTES.

Bret Harte commenced in the August number of *Scribner's Monthly* his new story, "An Episode of Fiddletown," promised last fall. This story, for which the publishers paid Mr. Harte $1,000, probably the highest price ever paid for any story of its length, will run through three numbers of the magazine, ending in October. It is in Mr. Harte's best vein, and has been graphically illustrated by Sheppard. The second chapter contains a prose description of the Heathen Chinee, with a picture by Sheppard, both of which are quite unsurpassed.

The *Rural Southland* has been merged in *Our Home Journal* of New Orleans, which will be continued under the name of *Our Home Journal and Rural Southland*, by its enterprising publisher, Mr. James H. Hummel, who we are sure will give his readers a weekly paper worth many times more than the price he demands for it—$3 a year.

The *Eclectic*, for August, contains a fine portrait of our great novelist, Nathaniel Hawthorne, and a good list of articles which are solidly instructive without being too heavy for summer reading. E. R. Pelton, New York; $5 a year.

The *Southern Watchman* is the name of a new monthly magazine of literature and agriculture, the first number of which is before us, showing many evidences of ability and taste. Moore Bros., Ringwood, N. C.; $1 a year.

—— Messrs. Mathews and McMichael contemplate publishing at Thomaston, Ga., a weekly paper called the *Monitor and Miscellany*, and devoted to the interests of the Primitive Baptists, and to general news and information. Terms, $2 a year.

The first number of the *Rural Texan*, a 32-page magazine, to be devoted to the agricultural interests of Texas, is announced for publication in October. Charles E. Brown & Co., Calvert, Texas; $2 a year.

MERE MENTION.

Ridgeway, N. C., has a company of enthusiastic French vine growers, who are planting largely the European grape, in the open ground, with a view to make wine. We hope their enterprise will meet their expectations, but can hardly sympathize with them in their unbounded faith.

——Definite arrangements have been made to locate a colony of Italians upon lands near Almeda, in Beaufort County, owned by R. G. Holmes. They are sent out by the Italian Emigration Society of New York to the Co-operative Colonization Society of Port Royal, of which Mr. Peter Papin is Superintendent.

——The Department of Agriculture has ordered 400 bushels of wheat from France, and an equal quantity from Chili, embracing all varieties of Winter wheat. The cargoes are expected to arrive about the 1st of September, and will be distributed in season for Fall sowing.

—— Eugene W. Hilgard, Professor of Chemistry in the University of Mississippi, has resigned his chair, to take the chair of Chemistry, in the University of Michigan, at Ann Arbor.

——A "Society for the Protection of Useful Birds" has recently been organized in Massachusetts.

——We have a letter from "George Augustus" for our next number.

It has generally been supposed that the leaves of plants neither absorb vapor of water nor water. M. Cailletet finds that when the supply of water to the roots is sufficient this is true, but if the supply to the roots is insufficient, the leaves will absorb liquid water though they will not absorb watery vapor.

FOR OUR YOUNG FOLKS.

THE SQUIRREL AND THE MOUNTAIN.

It is related that "once upon a time" a mountain and a squirrel had a quarrel. The mountain called his playful, furry neighbor "little prig."

"It is true," replied the squirrel, "I am not very big, but if I can not carry trees upon my back, like you, neither can you make a squirrel track or crack a nut."

A LESSON FOR A LAZY BOY.

A farmer went to town one day, accompanied by his son, little Thomas.

"See," said he to him on the way, "there is a broken horse-shoe in the road; pick it up and put it in your pocket."

"O no, father," replied Thomas, it is n't worth while to stoop and pick it up."

His father, answering nothing, picked it up, and put it in his own pocket. He sold it to the blacksmith of the next village for three farthings, and bought cherries with the money.

After this they continued their journey. The sun was burning hot. Neither house nor tree nor spring was anywhere to be seen. Thomas suffered with thirst, and had great difficulty in keeping up with his father.

The latter, then, as if by accident, let fall a cherry. Thomas picked it up with as much eagerness as if it had been gold, and put it in his mouth. This game continued until all the cherries had been picked up. When the last had been eaten, the father turned to his son, smiling, and said to him:

"You see now that if you had been willing to stoop once to pick up the horse-shoe, you would not have been obliged to do it a hundred times for the cherries."

A GAME FOR CHILDREN.

Among the many new games for children which have recently been introduced, is the following very pretty one, which we clip from the *Rural New Yorker*, and called "My Lady's Toilet:"

The name of an article of dress is given to each one of the company, chairs are placed for all the party but one, so as to leave one chair too few. They all seat themselves but one, who is called the Lady's Maid, and stands in the centre, when the Maid calls for any article of dress. The one who has that name instantly rises, repeats the word, and seats herself again. For instance, the Maid says, "My Lady's up and wants her dress." "Dress," says the one who has that name, rising at the time she speaks, and sitting down as quickly. "My Lady's up and wants her brush." "Brush," says Brush, jumping up and repeating. "Her handkerchief, watch and chain," says each one of three, rising together. "My Lady's up and wants her whole toilet!" When this is said, then every one must jump up and change chairs, and, as there is one chair wanting, of course it occasions a scramble, and whoever is left standing must be Lady's Maid, and call to the others, as before.

NAUGHTY WORDS STICK.

Never say them, and never listen to them if you can help it. Said Charlie to one of his playmates, "I don't want to hear naughty words."

"It does not signify," answered the boy, "for they go in at one ear and out at the other."

"No," replied Charlie, "the worst of it is, when naughty words get in they stick, so I mean to do my best to keep them out."